

## SEARCH REQUEST FORM

161021

Requestor's Name: JOHN MAPLES Serial Number: 10/758,541  
Date: 7-30-05 Phone: (571) 272-1287 Art Unit: 1745  
6C89

## Search Topic:

Please write a detailed statement of search topic. Describe specifically as possible the subject matter to be searched. Define any terms that may have a special meaning. Give examples or relevant citations, authors, keywords, etc., if known. For sequences, please attach a copy of the sequence. You may include a copy of the broadest and/or most relevant claim(s).

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## Type of Search

☐ N.A. Sequence  
☐ A.A. Sequence  
☒ Structure (5)  
☒ Bibliographic (and)

## Vendors

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☐ Dialog  
☐ APS  
☐ Geninfo  
☐ SDC  
☐ DARC/Questel  
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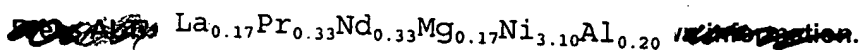
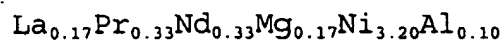
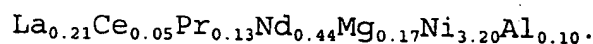
Include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

- \*For Foreign Patent Family Searches Only\*  
Include the country name and patent number.
- Provide examples or give us relevant citations, authors, etc., if known.
- FAX or send the **abstract, pertinent claims** (not all of the claims), **drawings, or chemical structures** to your EIC or branch library.

Enter your Search Topic Information below:

An alkaline storage battery comprising a negative electrode, a positive electrode comprising nickel hydroxide as a positive electrode active material, and an alkaline electrolyte, wherein the negative electrode comprises (a) a hydrogen absorbing alloy represented by  $\text{Ln}_{1-x}\text{Mg}_x\text{Ni}_{y-a}\text{M}_a$  (where Ln is at least one element selected from rare earth elements, M is at least one element selected from the group consisting of Al, V, Nb, Ta, Cr, Mo, Mn, Fe, Co, Ga, Zn, Sn, In, Cu, Si and P,  $0.05 \leq x < 0.20$ ,  $2.8 \leq y \leq 3.9$  and  $0.10 \leq a \leq 0.50$ ) and (b) carbon as a conductive agent, and hydrogen content in the hydrogen absorbing alloy is not greater than 0.01 weight % when the battery is activated and is discharged to 1.0 V at one hour rate (It).

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**Enter your Contact Information below:**Name: Employee Number: Phone: Art Unit or Office: Building & Room Number: **Enter the case serial number (Required):** 

If not related to a patent application, please enter NA here.

**Class / Subclass(es)** **Earliest Priority Filing Date:** **Format preferred for results:**☒ Paper   ☐ Diskette   ☐ E-mail**Provide detailed information on your search topic:**

- In your own words, describe in detail the concepts or subjects you want us to search.
- Include synonyms, keywords, and acronyms. Define terms that have special meanings.
- **\*For Chemical Structure Searches Only\***  
Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers
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FILE 'HCAPLUS'

L1 1833 SEA YASUOKA ?/AU  
L2 22506 SEA MURATA ?/AU  
L3 26276 SEA ISHIDA ?/AU  
L4 8 SEA L1 AND L2 AND L3  
SEL L4 1-8 RN

FILE 'REGISTRY'

L5 57 SEA (1333-74-0/BI OR 11113-74-9/BI OR 1310-58-3/BI OR  
L6 35 SEA L5 AND AYS/CI

FILE 'HCA'

L7 8 SEA L6  
L8 1 SEA L7 NOT L4

FILE 'REGISTRY'

L14 2234 SEA (LNTH OR B3)/PG (L) MG/ELS (L) NI/ELS  
L15 1161 SEA L14 NOT ((A1 OR B4 OR ACTN OR SHEL OR A6 OR A7 OR  
A8)/PG OR (C OR H OR BE OR CA OR SR OR BA OR RA OR AC OR  
W OR TC OR RE OR RU OR OS OR RH OR IR OR PD OR PT OR AG  
OR AU OR CD OR HG OR B OR TL OR GE OR PB OR N OR AS OR  
SB OR BI)/ELS)  
L16 792 SEA L15 AND 3<ELC.SUB  
L17 20 SEA L16 AND L5

FILE 'HCA'

L18 7 SEA L17  
L19 224 SEA L16  
L20 209555 SEA BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY?  
OR GALVANI? OR WET OR DRY OR PRIMARY OR SECONDARY) (2A) (CE  
LL OR CELLS) OR WETCELL? OR DRYCELL?

FILE 'REGISTRY'

E HYDROGEN/CN  
L21 1 SEA HYDROGEN/CN

FILE 'HCA'

L22 427188 SEA L21 OR H2 OR (H OR HYDROGEN#) (2A) (SORB? OR SORP? OR  
ADSORB? OR ADSORP? OR ABSORP? OR ABSORB? OR CHEMISORB?  
OR CHEMISORP? OR CHEMICOSORB? OR CHEMICOSORP?)  
L23 14006 SEA (H OR HYDROGEN#) (2A) (STORE# OR STORING# OR STORAG?)  
L24 128 SEA L19 AND (L22 OR L23)  
L25 117 SEA L19 AND L20  
L26 112 SEA L24 AND L25

## FILE 'REGISTRY'

E NICKEL HYDROXIDE/CN  
L27 2 SEA "NICKEL HYDROXIDE"/CN  
E CARBON/CN  
L28 1 SEA CARBON/CN  
E GRAPHITE/CN  
L29 1 SEA GRAPHITE/CN

## FILE 'HCA'

L30 8856 SEA L27 OR (NICKEL# OR NI) (W) (HYDROXIDE# OR DIHYDROXIDE#  
OR TETRAHYDROXIDE#) OR NI(W)OH(W) (2 OR 4)  
L31 467583 SEA L28 OR L29 OR GRAPHIT?  
L32 22 SEA L26 AND L30  
L33 1 SEA L26 AND L31  
L34 6 SEA L19 AND L31  
L35 2 SEA L34 AND (L20 OR L22 OR L23 OR L30)

## FILE 'REGISTRY'

L36 589 SEA L16 AND LA/ELS  
L37 198 SEA L16 AND PR/ELS  
L38 206 SEA L16 AND ND/ELS  
L39 374 SEA L16 AND AL/ELS  
L40 116 SEA L36 AND L37 AND L38 AND L39  
L41 103 SEA L40 AND 50-100 NI/MAC  
L42 17 SEA L41 AND L17

## FILE 'HCA'

L43 22 SEA L41  
L44 22 SEA L43 AND (L20 OR L22 OR L23 OR L30)  
L45 42 SEA L18 OR L32 OR L33 OR L35 OR L34 OR L44

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L45 ANSWER 1 OF 42 HCA COPYRIGHT 2005 ACS on STN

143:100191 Cycling durability and degradation behavior of La-Mg-Ni-Co-type metal hydride electrodes. Liu, Yongfeng; Pan, Hongge; Yue, Yuanjian; Wu, Xuefeng; Chen, Ni; Lei, Yongquan (Department of Materials Science and Engineering, Zhejiang University, Hangzhou, 310027, Peop. Rep. China). Journal of Alloys and Compounds, 395(1-2), 291-299 (English) 2005. CODEN: JALCEU. ISSN: 0925-8388. Publisher: Elsevier B.V..

AB The cycling durability and degrdn. behavior of the La-Mg-Ni-based **hydrogen storage** alloys La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>3.4-x</sub>Co<sub>x</sub>Mn<sub>0.1</sub> (x = 0, 0.75, 1.3) during charge/discharge cycling has been systematically studied by XRD, SEM, EIS, XPS and AES measurements. The reasons for the improvement of the cycling stability of the alloy electrodes with increasing Co content have also been analyzed and discussed. The results show that the pulverization of the alloy particles and the oxidn./corrosion of the active components of the alloys during charge/discharge cycling in the alk. electrolyte are the two main factors responsible for the fast capacity degrdn. of the La-Mg-Ni-based alloy electrodes, and the capacity degrdn. mechanism can be decompd. into three consequent stages, i.e., the pulverization and Mg oxidn. stage, the Mg and La oxidn. stage and the oxidn. and passivation stage. With the increase in Co content, the cell vol. expansion ratio .DELTA.V/V of the two main phases during hydrogenation/dehydrogenation was obviously decreased, which results in a redn. of the pulverization of the alloy particles and, consequently, in an increase in the charge and discharge efficiency and a decrease in the rate of contact of the fresh alloy surface with alk. electrolyte and a subsequent lower rate of oxidn./corrosion. It is believed to be the most important reason responsible for the improvement of the cycling stability of the alloy electrodes with increasing Co content.

IT **12054-48-7, Nickel hydroxide**

**769963-01-1 769963-04-4 769963-08-8**

(cycling durability and degrdn. behavior of La-Mg-Ni-Co-type metal hydride electrodes)

RN 12054-48-7 HCA

CN Nickel hydroxide (Ni(OH)<sub>2</sub>) (8CI, 9CI) (CA INDEX NAME)

HO-Ni-OH

RN 769963-01-1 HCA

CN Nickel alloy, base, Ni 64,La 31,Mg 2.4,Mn 1.8 (9CI) (CA INDEX NAME)

Component Component Component

	Percent	Registry Number
Ni	64	7440-02-0
La	31	7439-91-0
Mg	2.4	7439-95-4
Mn	1.8	7439-96-5

RN 769963-04-4 HCA

CN Nickel alloy, base, Ni 50,La 31,Co 14,Mg 2.4,Mn 1.8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	50	7440-02-0
La	31	7439-91-0
Co	14	7440-48-4
Mg	2.4	7439-95-4
Mn	1.8	7439-96-5

RN 769963-08-8 HCA

CN Nickel alloy, base, Ni 40,La 31,Co 25,Mg 2.4,Mn 1.8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	40	7440-02-0
La	31	7439-91-0
Co	25	7440-48-4
Mg	2.4	7439-95-4
Mn	1.8	7439-96-5

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 49IT Secondary **batteries**(Ni-MH, anodes; cycling durability and degrdn. behavior of  
La-Mg-Ni-Co-type metal hydride electrodes)IT **Battery** electrodes

Cyclic voltammetry

(cycling durability and degrdn. behavior of La-Mg-Ni-Co-type  
metal hydride electrodes)

IT Alloys, uses

(hydrogen-storage; cycling durability and  
degrdn. behavior of La-Mg-Ni-Co-type metal hydride electrodes)IT 7440-02-0, Nickel, uses **12054-48-7, Nickel****hydroxide** 55070-72-9, **Nickel hydroxide**  
**oxide 769963-01-1 769963-04-4**

**769963-08-8**

(cycling durability and degradn. behavior of La-Mg-Ni-Co-type metal hydride electrodes)

L45 ANSWER 2 OF 42 HCA COPYRIGHT 2005 ACS on STN

142:414339 Effect of Co and Mn on the electrochemical properties of La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2</sub>(Co+Mn) alloys. Guo, Jin; Jiang, Wei-qing; Xiao, Rong-jun; Huang, Cun-ke; Huang, Dan (College of Physics Science and Technology, Guangxi University, Nanning, 530004, Peop. Rep. China). Journal of Alloys and Compounds, 390(1-2), 301-304 (English) 2005. CODEN: JALCEU. ISSN: 0925-8388. Publisher: Elsevier B.V..

AB The effects of the relative Co and Mn content on the electrochem. performance of La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2</sub>(Co + Mn) **hydrogen storage** alloys were studied. The crystal structure, discharge capacity and cycle life of the alloys were evaluated. For all alloys, the higher the Co content, the larger is discharge capacity. The appropriate amt. of Mn in La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2</sub>(Co + Mn) alloys can extend the cycle life of the **hydrogen storage** alloys although the alloys have less discharge capacity than those with higher Co content. The LaNi<sub>3.87</sub>Mn<sub>1.13</sub> phase appears and the LaNi<sub>5</sub> phase disappears with replacement of Co by Mn.

IT **12054-48-7, Nickel hydroxide**

(cathode; of LaMgNi(Co + Mn) **hydrogen storage** alloys)

RN 12054-48-7 HCA

CN Nickel hydroxide (Ni(OH)<sub>2</sub>) (8CI, 9CI) (CA INDEX NAME)

HO-Ni-OH

IT **850544-81-9P 850544-82-0P 850544-83-1P**

**850544-84-2P 850544-85-3P 850544-86-4P**

**850544-87-5P**

(effect of Co and Mn on electrochem. properties of La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2</sub>(Co+Mn) alloys)

RN 850544-81-9 HCA

CN Nickel alloy, base, Ni 42, La 35, Mn 16, Co 4.2, Mg 2.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	42	7440-02-0
La	35	7439-91-0
Mn	16	7439-96-5
Co	4.2	7440-48-4
Mg	2.6	7439-95-4



RN 850544-82-0 HCA  
CN Lanthanum alloy, base, La 44,Co 27,Ni 26,Mg 3.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
La	44	7439-91-0
Co	27	7440-48-4
Ni	26	7440-02-0
Mg	3.3	7439-95-4

RN 850544-83-1 HCA  
CN Nickel alloy, base, Ni 42,La 35,Co 17,Mn 3.9,Mg 2.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	42	7440-02-0
La	35	7439-91-0
Co	17	7440-48-4
Mn	3.9	7439-96-5
Mg	2.6	7439-95-4

RN 850544-84-2 HCA  
CN Nickel alloy, base, Ni 42,La 35,Co 13,Mn 7.9,Mg 2.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	42	7440-02-0
La	35	7439-91-0
Co	13	7440-48-4
Mn	7.9	7439-96-5
Mg	2.6	7439-95-4

RN 850544-85-3 HCA  
CN Nickel alloy, base, Ni 42,La 35,Mn 12,Co 8.5,Mg 2.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	42	7440-02-0
La	35	7439-91-0

Mn	12	7439-96-5
Co	8.5	7440-48-4
Mg	2.6	7439-95-4

RN 850544-86-4 HCA

CN Nickel alloy, base, Ni 42,La 35,Co 11,Mn 9.8,Mg 2.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	42	7440-02-0
La	35	7439-91-0
Co	11	7440-48-4
Mn	9.8	7439-96-5
Mg	2.6	7439-95-4

RN 850544-87-5 HCA

CN Nickel alloy, base, Ni 42,La 35,Mn 20,Mg 2.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	42	7440-02-0
La	35	7439-91-0
Mn	20	7439-96-5
Mg	2.6	7439-95-4

IT 1333-74-0, Hydrogen, uses

(**storage** alloys; effect of Co and Mn on electrochem.  
properties of La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2</sub>(Co+Mn) alloys)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 56, 75, 76

ST electrochem performance hydriding secondary **battery** anode  
**hydrogen storage** alloy; discharge capacity cobalt  
lanthanum magnesium manganese nickel **hydrogen**  
**storage**

IT Hydriding

(dehydriding; of La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2</sub>(Co + Mn) **hydrogen**  
**storage** alloys)

IT Electric capacitance

(discharge capacity; of La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2</sub>(Co + Mn) **hydrogen**

- storage** alloys)
- IT Electric potential  
(discharge voltage; of  $\text{La}_{0.7}\text{Mg}_{0.3}\text{Ni}_2(\text{Co} + \text{Mn})$  **hydrogen storage** alloys)
- IT Alloys, uses  
(for **hydrogen storage**; effect of Co and Mn on electrochem. properties of  $\text{La}_{0.7}\text{Mg}_{0.3}\text{Ni}_2(\text{Co}+\text{Mn})$  alloys)
- IT **Battery** anodes  
(**hydrogen storage** materials for; of  $\text{La}_{0.7}\text{Mg}_{0.3}\text{Ni}_2(\text{Co} + \text{Mn})$  **hydrogen storage** alloys)
- IT Crystal structure  
Hydriding  
Secondary **batteries**  
(of  $\text{La}_{0.7}\text{Mg}_{0.3}\text{Ni}_2(\text{Co} + \text{Mn})$  **hydrogen storage** alloys)
- IT **12054-48-7, Nickel hydroxide**  
(cathode; of  $\text{LaMgNi}(\text{Co} + \text{Mn})$  **hydrogen storage** alloys)
- IT **850544-81-9P 850544-82-0P 850544-83-1P**  
**850544-84-2P 850544-85-3P 850544-86-4P**  
**850544-87-5P**  
(effect of Co and Mn on electrochem. properties of  $\text{La}_{0.7}\text{Mg}_{0.3}\text{Ni}_2(\text{Co}+\text{Mn})$  alloys)
- IT 1310-58-3, Potassium hydroxide, uses 13463-39-3, Nickel carbonyl  
(of  $\text{La}_{0.7}\text{Mg}_{0.3}\text{Ni}_2(\text{Co} + \text{Mn})$  **hydrogen storage** alloys)
- IT 12423-35-7, Nickel, compd. with lanthanum (3:1) 682809-14-9  
850544-88-6  
(phase formed in alloys; of  $\text{La}_{0.7}\text{Mg}_{0.3}\text{Ni}_2(\text{Co} + \text{Mn})$  **hydrogen storage** alloys)
- IT 12196-72-4  
(phase in alloy with lower Co content; of  $\text{La}_{0.7}\text{Mg}_{0.3}\text{Ni}_2(\text{Co} + \text{Mn})$  **hydrogen storage** alloys)
- IT **1333-74-0, Hydrogen**, uses  
(**storage** alloys; effect of Co and Mn on electrochem. properties of  $\text{La}_{0.7}\text{Mg}_{0.3}\text{Ni}_2(\text{Co}+\text{Mn})$  alloys)
- L45 ANSWER 3 OF 42 HCA COPYRIGHT 2005 ACS on STN  
142:376510 **Hydrogen-absorbing** alloy for secondary alkaline **battery** and the **battery**. Imasato, Atsumu; Ishida, Jun; Yasuoka, Shigekazu (Sanyo Electric Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2005093289 A2 20050407, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-326522 20030918.
- AB The title alloy contains at least a rare earth element, Mg, Ni, and Al; and has an oxide or hydroxide layer form on an alloy powder, having a peak intensity ratio  $I_a/I_b \geq 0.1$  ( $I_a$  represents an intensity of the highest peak in a range of  $2.\theta = 30-34.\text{degree}$ ).

in the X-ray diffraction pattern using CuK.alpha.-radiation as the X-ray source and Ib represents the intensity of the highest peak in a range of 2.theta. = 40-44.degree.), along with satisfying  $x^2/Y$  .ltoreq.1.3.times.10<sup>-5</sup> [X = spec. surface area (m<sup>2</sup>/g); and Y = 0 concn. (ppm)]. The **battery** has a cathode, an anode using the above alloy, and an alkali electrolyte soln.

IT **12054-48-7, Nickel hydroxide (Ni(OH)<sub>2</sub>)**  
 (hydrogen absorbing alloy anodes for secondary Ni-H **batteries**)  
 RN 12054-48-7 HCA  
 CN Nickel hydroxide (Ni(OH)<sub>2</sub>) (8CI, 9CI) (CA INDEX NAME)

HO—Ni—OH

IT **848836-03-3**  
 (hydrogen absorbing alloy anodes for secondary Ni-H **batteries**)  
 RN 848836-03-3 HCA  
 CN Nickel alloy, base, Ni 50,Nd 19,Pr 19,La 9.2,Al 1.5,Mg 1.1 (9CI)  
 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	50	7440-02-0
Nd	19	7440-00-8
Pr	19	7440-10-0
La	9.2	7439-91-0
Al	1.5	7429-90-5
Mg	1.1	7439-95-4

IC ICM H01M004-38  
 ICS B22F001-02; H01M004-24; H01M010-30; C22C019-00  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST **hydrogen absorbing alloy anode secondary nickel battery**  
 IT **Battery** anodes  
 Secondary **batteries**  
 (hydrogen absorbing alloy anodes for secondary Ni-H **batteries**)  
 IT Alloys, uses  
 (hydrogen absorbing alloy anodes for secondary Ni-H **batteries**)  
 IT 1310-58-3, Potassium hydroxide, processes 1314-13-2, Zinc oxide, processes **12054-48-7, Nickel hydroxide (Ni(OH)<sub>2</sub>)** 12672-51-4, Cobalt

hydroxide

(**hydrogen absorbing** alloy anodes for  
secondary Ni-H **batteries**)

IT **848836-03-3**

(**hydrogen absorbing** alloy anodes for  
secondary Ni-H **batteries**)

L45 ANSWER 4 OF 42 HCA COPYRIGHT 2005 ACS on STN

142:376420 Effect of La/Ce ratio on the structure and electrochemical  
characteristics of  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$  ( $x=0.1-0.5$ )

**hydrogen storage** alloys. Zhang, X. B.; Sun, D.

Z.; Yin, W. Y.; Chai, Y. J.; Zhao, M. S. (Key Laboratory of Rare  
Earth Chemistry and Physics, Changchun Institute of Applied  
Chemistry, Graduate School of Chinese Academy of Sciences, Chinese  
Academy of Sciences, Changchun, 130022, Peop. Rep. China).

Electrochimica Acta, 50(9), 1957-1964 (English) 2005. CODEN:

ELCAAV. ISSN: 0013-4686. Publisher: Elsevier B.V..

AB The effect of La/Ce ratio on the structure and electrochem.  
characteristics of the  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$  ( $x = 0.1, 0.2, 0.3,$   
 $0.4, 0.5$ ) alloys was studied systematically. The result of the  
Rietveld analyses shows that, except for small amt. of impurity  
phases including  $\text{LaNi}$  and  $\text{LaNi}_2$ , all these alloys mainly consist of  
two phases: the  $\text{La}(\text{La}, \text{Mg})_2\text{Ni}_9$  phase with the rhombohedral  
 $\text{PuNi}_3$ -type structure and the  $\text{LaNi}_5$  phase with the hexagonal  
 $\text{CaCu}_5$ -type structure. The abundance of the  $\text{La}(\text{La}, \text{Mg})_2\text{Ni}_9$  phase  
decreases with increasing cerium content whereas the  $\text{LaNi}_5$  phase  
increases with increasing Ce content, also, both the a and cell  
vols. of the two phases decrease with the increase of Ce content.  
The max. discharge capacity decreases from 367.5 mAh g<sup>-1</sup> ( $x = 0.1$ )  
to 68.3 mAh g<sup>-1</sup> ( $x = 0.5$ ) but the cycling life gradually improve.  
As the discharge c.d. is 1200 mA g<sup>-1</sup>, the HRD increases from 55.4%  
( $x = 0.1$ ) to 67.5% ( $x = 0.3$ ) and then decreases to 52.1% ( $x = 0.5$ ).  
The cell vol. redn. with increasing  $x$  is detrimental to hydrogen  
diffusion  $D$  and accordingly decreases the low temp.  
discharge-ability of the  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$  ( $x = 0.1-0.5$ )  
alloy electrodes.

IT **12054-48-7, Nickel hydroxide**

(effect of La/Ce ratio on structure and electrochem.  
characteristics of  $\text{LaCeMgNiCo}$  ( $x=0.1-0.5$ ) **hydrogen**  
**storage** alloys)

RN 12054-48-7 HCA

CN Nickel hydroxide ( $\text{Ni}(\text{OH})_2$ ) (8CI, 9CI) (CA INDEX NAME)

HO—Ni—OH

IT **849699-37-2P 849699-38-3P 849699-39-4P**  
**849699-41-8P 849699-43-0P**

(effect of La/Ce ratio on structure and electrochem.  
characteristics of  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$  ( $x=0.1-0.5$ )  
**hydrogen storage** alloys)

RN 849699-37-2 HCA

CN Nickel alloy, base, Ni 55,La 28,Co 9.9,Ce 4.7,Mg 2.4 (9CI) (CA  
INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	55	7440-02-0
La	28	7439-91-0
Co	9.9	7440-48-4
Ce	4.7	7440-45-1
Mg	2.4	7439-95-4

RN 849699-38-3 HCA

CN Nickel alloy, base, Ni 72,Co 13,Ce 12,Mg 3.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	72	7440-02-0
Co	13	7440-48-4
Ce	12	7440-45-1
Mg	3.2	7439-95-4

RN 849699-39-4 HCA

CN Nickel alloy, base, Ni 55,La 19,Ce 14,Co 9.9,Mg 2.4 (9CI) (CA INDEX  
NAME)

Component	Component Percent	Component Registry Number
Ni	55	7440-02-0
La	19	7439-91-0
Ce	14	7440-45-1
Co	9.9	7440-48-4
Mg	2.4	7439-95-4

RN 849699-41-8 HCA

CN Nickel alloy, base, Ni 55,Ce 19,La 14,Co 9.9,Mg 2.4 (9CI) (CA INDEX  
NAME)

Component	Component Percent	Component Registry Number
Ni	55	7440-02-0

Ce	19	7440-45-1
La	14	7439-91-0
Co	9.9	7440-48-4
Mg	2.4	7439-95-4

RN 849699-43-0 HCA

CN Nickel alloy, base, Ni 55,Ce 23,Co 9.9,La 9.3,Mg 2.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Ni	55	7440-02-0
Ce	23	7440-45-1
Co	9.9	7440-48-4
La	9.3	7439-91-0
Mg	2.4	7439-95-4

IT **1333-74-0**, Hydrogen, processes  
 (effect of La/Ce ratio on structure and electrochem.  
 characteristics of La<sub>0.7-x</sub>Ce<sub>x</sub>Mg<sub>0.3</sub>Ni<sub>2.8</sub>Co<sub>0.5</sub> (x=0.1-0.5)  
**hydrogen storage** alloys)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 56, 75, 76

ST Lanthanum Cerium ratio cobalt magnesium nickel alloy crystal  
 lattice; electrochem discharging polarization resistance  
**hydrogen storage** alloy **battery** electrode

IT Pressure  
 (control for hydrogen desorption; effect of La/Ce ratio on  
 structure and electrochem. characteristics of  
 La<sub>0.7-x</sub>Ce<sub>x</sub>Mg<sub>0.3</sub>Ni<sub>2.8</sub>Co<sub>0.5</sub> (x=0.1-0.5) **hydrogen  
 storage** alloys)

IT Electric capacitance  
 (discharging cycles; effect of La/Ce ratio on structure and  
 electrochem. characteristics of La<sub>0.7-x</sub>Ce<sub>x</sub>Mg<sub>0.3</sub>Ni<sub>2.8</sub>Co<sub>0.5</sub>  
 (x=0.1-0.5) **hydrogen storage** alloys)

IT Exchange current (electric)  
 Hydriding  
 Polarization resistance  
 (effect of La/Ce ratio on structure and electrochem.  
 characteristics of La<sub>0.7-x</sub>Ce<sub>x</sub>Mg<sub>0.3</sub>Ni<sub>2.8</sub>Co<sub>0.5</sub> (x=0.1-0.5)  
**hydrogen storage** alloys)

- IT Crystal structure types  
(hexagonal; effect of La/Ce ratio on structure and electrochem. characteristics of  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$  ( $x=0.1-0.5$ ) **hydrogen storage** alloys)
- IT Alloys, uses  
(**hydrogen storage**; effect of La/Ce ratio on structure and electrochem. characteristics of  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$  ( $x=0.1-0.5$ ) **hydrogen storage** alloys)
- IT Diffusion  
(hydrogen; effect of La/Ce ratio on structure and electrochem. characteristics of  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$  ( $x=0.1-0.5$ ) **hydrogen storage** alloys)
- IT Secondary **batteries**  
(nickel metal hydride alloys for; effect of La/Ce ratio on structure and electrochem. characteristics of  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$  ( $x=0.1-0.5$ ) **hydrogen storage** alloys)
- IT Crystal structure types  
(rhombohedral; effect of La/Ce ratio on structure and electrochem. characteristics of  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$  ( $x=0.1-0.5$ ) **hydrogen storage** alloys)
- IT Current density  
(vs. overpotential, for assembled electrodes; effect of La/Ce ratio on structure and electrochem. characteristics of  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$  ( $x=0.1-0.5$ ) **hydrogen storage** alloys)
- IT **12054-48-7, Nickel hydroxide**  
(effect of La/Ce ratio on structure and electrochem. characteristics of  $\text{LaCeMgNiCo}$  ( $x=0.1-0.5$ ) **hydrogen storage** alloys)
- IT **1310-58-3, Potassium hydroxide**, uses **12026-04-9, Nickel hydroxide** oxide ( $\text{NiO}(\text{OH})$ )  
(effect of La/Ce ratio on structure and electrochem. characteristics of  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$  ( $x=0.1-0.5$ ) **hydrogen storage** alloys)
- IT **849699-37-2P 849699-38-3P 849699-39-4P 849699-41-8P 849699-43-0P**  
(effect of La/Ce ratio on structure and electrochem. characteristics of  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$  ( $x=0.1-0.5$ ) **hydrogen storage** alloys)
- IT **1333-74-0, Hydrogen**, processes  
(effect of La/Ce ratio on structure and electrochem. characteristics of  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$  ( $x=0.1-0.5$ ) **hydrogen storage** alloys)
- IT **12142-63-1, LaNi** **12306-14-8**  
(impurity phase formed; effect of La/Ce ratio on structure and electrochem. characteristics of  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$ )



- (x=0.1-0.5) **hydrogen storage** alloys)
- IT 849699-47-4P  
(main phase formed; effect of La/Ce ratio on structure and electrochem. characteristics of  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$  (x=0.1-0.5) **hydrogen storage** alloys)
- IT 781676-79-7  
(phases formed; effect of La/Ce ratio on structure and electrochem. characteristics of  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$  (x=0.1-0.5) **hydrogen storage** alloys)
- IT 7440-02-0, Carbonyl nickel, uses  
(powd.; effect of La/Ce ratio on structure and electrochem. characteristics of  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$  (x=0.1-0.5) **hydrogen storage** alloys)
- IT 12196-72-4P  
(rhombohedral, main phase formed; effect of La/Ce ratio on structure and electrochem. characteristics of  $\text{La}_{0.7-x}\text{Ce}_x\text{Mg}_{0.3}\text{Ni}_{2.8}\text{Co}_{0.5}$  (x=0.1-0.5) **hydrogen storage** alloys)
- L45 ANSWER 5 OF 42 HCA COPYRIGHT 2005 ACS on STN  
142:358049 **Hydrogen-absorbing** alloy and its manufacture for anode in secondary alkaline **battery**.  
Ishida, Jun; Murata, Tetsuyuki; Yasuoka, Shigekazu (Sanyo Electric Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2005093211 A2 20050407, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-324364 20030917.
- AB The claimed alloy contg. a rare earth metal, Mg, Ni, and Al provides Cu-K.alpha. x-ray diffractometry highest peak intensities IA and IB in 2 .theta. = 31-33.degree. and 40-44.degree., resp., satisfying IA/IB .gtoreq.0.1 and has an oxidized surface. The claimed process comprises immersing the above **H-absorbing** alloy compn. in an alkali soln. for surface oxidn. The claimed **battery** equipped with the above **H-absorbing** alloy anode provides high capacity and long cycle life by suppressed reaction with an electrolyte soln.
- IT 1333-74-0, Hydrogen, uses  
(alloys contg. **absorbed**; manuf. of **hydrogen-absorbing** alloy having oxidized surface for anode in secondary alk. **battery**)
- RN 1333-74-0 HCA  
CN Hydrogen (8CI, 9CI) (CA INDEX NAME)
- H-H
- IT 848836-03-3  
(**hydrogen-absorbing**; manuf. of **hydrogen-absorbing** alloy having oxidized

surface for anode in secondary alk. **battery**)

RN 848836-03-3 HCA

CN Nickel alloy, base, Ni 50, Nd 19, Pr 19, La 9.2, Al 1.5, Mg 1.1 (9CI)  
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Ni	50	7440-02-0
Nd	19	7440-00-8
Pr	19	7440-10-0
La	9.2	7439-91-0
Al	1.5	7429-90-5
Mg	1.1	7439-95-4

IC ICM H01M004-38

ICS C22C019-00; C22C019-03; H01M010-30

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 56

ST **hydrogen absorbing** alloy surface oxidn anode alk  
**battery**

IT **Battery** anodes

(**hydrogen-absorbing**; manuf. of  
**hydrogen-absorbing** alloy having oxidized  
surface for anode in secondary alk. **battery**)

IT Secondary **batteries**

(manuf. of **hydrogen-absorbing** alloy having  
oxidized surface for anode in secondary alk. **battery**)

IT **1333-74-0**, Hydrogen, uses

(alloys contg. **absorbed**; manuf. of **hydrogen-**  
**absorbing** alloy having oxidized surface for anode in  
secondary alk. **battery**)

IT **848836-03-3**

(**hydrogen-absorbing**; manuf. of  
**hydrogen-absorbing** alloy having oxidized  
surface for anode in secondary alk. **battery**)

IT 1310-58-3, Potassium hydroxide, uses

(surface treatment by; manuf. of **hydrogen-**  
**absorbing** alloy having oxidized surface for anode in  
secondary alk. **battery**)

L45 ANSWER 6 OF 42 HCA COPYRIGHT 2005 ACS on STN

142:301025 Method for manufacture of **hydrogen**

**absorbing** alloy for alkaline **battery**. Yasuoka,  
Shigekazu; Ishida, Jun (Japan). U.S. Pat. Appl. Publ. US 2005056349  
A1 20050317, 8 pp. (English). CODEN: USXXCO. APPLICATION: US  
2004-937786 20040910. PRIORITY: JP 2003-321915 20030912; JP  
2004-234666 20040811.

AB The invention concerns a **hydrogen absorbing** alloy for a neg. electrode in which a layer having at least a 10 wt.% oxygen concn. is formed on a surface of particles of the alloy, and the magnesium concn. of the layer is 3.0-7.5 times as great as that in the central part of the particles where the oxygen concn. is less than 10 wt.%.

IT **847790-30-1P**

(method for manuf. of **hydrogen absorbing** alloy for alk. **battery**)

RN 847790-30-1 HCA

CN Nickel alloy, base, Ni 58, Nd 16, Pr 15, La 7.6, Al 1.7, Mg 1.3 (9CI)  
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	58	7440-02-0
Nd	16	7440-00-8
Pr	15	7440-10-0
La	7.6	7439-91-0
Al	1.7	7429-90-5
Mg	1.3	7439-95-4

IT **1333-74-0**, Hydrogen, uses

(method for manuf. of **hydrogen absorbing** alloy for alk. **battery**)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

IC ICM H01M004-58

ICS C22C030-00

INCL 148442000; 429218200; 420900000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 56

ST **battery** anode **hydrogen absorbing** alloy  
manuf

IT Alloys, uses

(**hydrogen-absorbing**; method for manuf. of  
**hydrogen absorbing** alloy for alk.  
**battery**)

IT **Battery** anodes

Secondary **batteries**

(method for manuf. of **hydrogen absorbing**  
alloy for alk. **battery**)

IT Fluoropolymers, uses

(method for manuf. of **hydrogen absorbing alloy for alk. battery**)

IT 244168-39-6P **847790-30-1P**  
(method for manuf. of **hydrogen absorbing alloy for alk. battery**)

IT 9002-84-0, Ptfe 9003-04-7, Sodium polyacrylate  
(method for manuf. of **hydrogen absorbing alloy for alk. battery**)

IT **1333-74-0**, Hydrogen, uses  
(method for manuf. of **hydrogen absorbing alloy for alk. battery**)

L45 ANSWER 7 OF 42 HCA COPYRIGHT 2005 ACS on STN  
141:413576 Nickel **hydrogen storage battery**  
. Endo, Masahiro; Kihara, Masaru (Sanyo Electric Co., Ltd., Japan).  
Jpn. Kokai Tokkyo Koho JP 2004319429 A2 20041111, 15 pp.  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-399233 20031128.  
PRIORITY: JP 2003-96025 20030331.

AB The disclosed **battery** uses alloy of the formula  
 $\text{Ln}_{1-x}\text{Mg}_x(\text{Ni}_{1-a-b}\text{Co}_a\text{X}_b)_y$  ( Ln = metal selected from rare earth  
elements, Ca, Sr, Sc, Y, Ti, Zr, and Hf; X = Mn, Zn;  $0 < x < 1$ ;  $2.5$   
.ltoreq.  $y$  .ltoreq.  $4.5$ ;  $0 < a$  .ltoreq.  $0.1$ ;  $0 < b$  .ltoreq.  $0.1$ ) as  
anodic **h-storage** alloys. The **battery**  
id superior in shelf life and cycle life.

IT **1333-74-0**, Hydrogen, uses  
(alloys for **storage of hydrogen in**  
nickel-hydrogen **battery** anode)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

IT **792188-73-9P 792188-76-2P**  
(**hydrogen storage alloy for nickel-hydrogen battery** anodes)

RN 792188-73-9 HCA

CN Nickel alloy, base, Ni 60,La 25,Nd 5.1,Pr 3.3,Mg 2.5,Co 2,Mn 1.8,Al  
0.9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	60	7440-02-0
La	25	7439-91-0
Nd	5.1	7440-00-8
Pr	3.3	7440-10-0
Mg	2.5	7439-95-4

Co	2	7440-48-4
Mn	1.8	7439-96-5
Al	0.9	7429-90-5

RN 792188-76-2 HCA

CN Nickel alloy, base, Ni 59, La 25, Nd 5.1, Pr 3.3, Mg 2.5, Zn 2.2, Co 2, Al 0.9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	25	7439-91-0
Nd	5.1	7440-00-8
Pr	3.3	7440-10-0
Mg	2.5	7439-95-4
Zn	2.2	7440-66-6
Co	2	7440-48-4
Al	0.9	7429-90-5

IC ICM H01M004-38

ICS H01M004-52; H01M010-30

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **hydrogen storage** alloy secondary **battery**  
anodeIT **Battery** anodes  
(nickel-**hydrogen battery**; **hydrogen storage** alloys for)IT **1333-74-0**, Hydrogen, uses  
(alloys for **storage** of **hydrogen** in  
nickel-hydrogen **battery** anode)IT **792188-73-9P** 792188-74-0P 792188-75-1P  
**792188-76-2P** 792188-77-3P 792188-78-4P  
(**hydrogen storage** alloy for nickel-hydrogen  
**battery** anodes)

L45 ANSWER 8 OF 42 HCA COPYRIGHT 2005 ACS on STN

141:382005 An electrochemical study of La<sub>0.4</sub>Ce<sub>0.3</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Mn<sub>x</sub>Co<sub>0.525</sub> (x = 0.1-0.4) **hydrogen storage** alloys. Pan, Hongge; Jin, Qinwei; Gao, Mingxia; Liu, Yongfeng; Li, Rui; Lei, Yongquan; Wang, Qidong (Department of Materials Science and Engineering, Zhejiang University, Hangzhou, 310027, Peop. Rep. China). Journal of Alloys and Compounds, 376(1-2), 196-204 (English) 2004. CODEN: JALCEU. ISSN: 0925-8388. Publisher: Elsevier Science B.V..

AB In this paper, the structural and electrochem. properties of La<sub>0.4</sub>Ce<sub>0.3</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Mn<sub>x</sub>Co<sub>0.525</sub> (x = 0.1-0.4) **hydrogen storage** alloys have been studied systematically. It can be

found by XRD Rietveld anal. that all these alloys mainly consist of two phases: the La(La, Mg)<sub>2</sub>Ni<sub>9</sub> phase with the rhombohedral PuNi<sub>3</sub>-type structure and the LaNi<sub>5</sub> phase with the hexagonal CaCu<sub>5</sub>-type structure. The XRD anal. results also reveal that with increasing manganese content in the alloys, the La(La, Mg)<sub>2</sub>Ni<sub>9</sub> phase content decreases and the LaNi<sub>5</sub> phase content increases and both the lattice parameters and the cell vol. of La(La, Mg)<sub>2</sub>Ni<sub>9</sub> and LaNi<sub>5</sub> phase increase. The P-C isotherms show that with increasing manganese content in the alloys the **hydrogen storage** capacity (H/M) changes very little and the plateau pressure for **hydrogen absorption** and desorption decreases evidently. The electrochem. studies show that the discharge capacity increases with increasing manganese content. The high rate dischargeability and the exchange c.d. I<sub>0</sub>, and the limiting c.d. I<sub>L</sub> of all alloy electrodes increase as x increases from 0.1 to 0.3 and then decrease when x increases further.

IT **12054-48-7, Nickel hydroxide (Ni(OH)<sub>2</sub>)**  
 (electrochem. study of **hydrogen storage**  
 alloys La.Ce.Mg.Ni.MnCo. (x = 0.1-0.4))  
 RN 12054-48-7 HCA  
 CN Nickel hydroxide (Ni(OH)<sub>2</sub>) (8CI, 9CI) (CA INDEX NAME)

HO-Ni-OH

IT **1333-74-0, Hydrogen, uses**  
 (electrochem. study of **hydrogen storage**  
 alloys La<sub>0.4</sub>Ce<sub>0.3</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Mn<sub>x</sub>Co<sub>0.525</sub> (x = 0.1-0.4))  
 RN 1333-74-0 HCA  
 CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

IT **781676-75-3 781676-76-4 781676-77-5**  
**781676-78-6**  
 (electrochem. study of **hydrogen storage**  
 alloys La<sub>0.4</sub>Ce<sub>0.3</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Mn<sub>x</sub>Co<sub>0.525</sub> (x = 0.1-0.4))  
 RN 781676-75-3 HCA  
 CN Nickel alloy, base, Ni 52, La 19, Ce 14, Co 11, Mg 2.5, Mn 1.9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	52	7440-02-0
La	19	7439-91-0

Ce	14	7440-45-1
Co	11	7440-48-4
Mg	2.5	7439-95-4
Mn	1.9	7439-96-5

RN 781676-76-4 HCA

CN Nickel alloy, base, Ni 52,La 18,Ce 14,Co 10,Mn 3.6,Mg 2.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	52	7440-02-0
La	18	7439-91-0
Ce	14	7440-45-1
Co	10	7440-48-4
Mn	3.6	7439-96-5
Mg	2.4	7439-95-4

RN 781676-77-5 HCA

CN Nickel alloy, base, Ni 52,La 18,Ce 13,Co 9.8,Mn 5.2,Mg 2.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	52	7440-02-0
La	18	7439-91-0
Ce	13	7440-45-1
Co	9.8	7440-48-4
Mn	5.2	7439-96-5
Mg	2.3	7439-95-4

RN 781676-78-6 HCA

CN Nickel alloy, base, Ni 52,La 17,Ce 13,Co 9.5,Mn 6.7,Mg 2.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	52	7440-02-0
La	17	7439-91-0
Ce	13	7440-45-1
Co	9.5	7440-48-4
Mn	6.7	7439-96-5
Mg	2.2	7439-95-4

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

- Section cross-reference(s): 49, 56
- ST **hydrogen storage** alloy cerium cobalt lanthanum  
magnesium manganese nickel
- IT Absorption  
(desorption; electrochem. study of **hydrogen storage** alloys La<sub>0.4</sub>Ce<sub>0.3</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Mn<sub>x</sub>Co<sub>0.525</sub> (x = 0.1-0.4))
- IT Current density  
Overvoltage  
Storage  
(electrochem. study of **hydrogen storage** alloys La<sub>0.4</sub>Ce<sub>0.3</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Mn<sub>x</sub>Co<sub>0.525</sub> (x = 0.1-0.4))
- IT Alloys, uses  
Hydrides  
(electrochem. study of **hydrogen storage** alloys La<sub>0.4</sub>Ce<sub>0.3</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Mn<sub>x</sub>Co<sub>0.525</sub> (x = 0.1-0.4))
- IT Secondary **batteries**  
(nickel-metal hydride, anodes; electrochem. study of **hydrogen storage** alloys La<sub>0.4</sub>Ce<sub>0.3</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Mn<sub>x</sub>Co<sub>0.525</sub> (x = 0.1-0.4))
- IT **12054-48-7, Nickel hydroxide (Ni(OH)<sub>2</sub>)**  
(electrochem. study of **hydrogen storage** alloys La.Ce.Mg.Ni.MnCo. (x = 0.1-0.4))
- IT **1333-74-0, Hydrogen, uses**  
(electrochem. study of **hydrogen storage** alloys La<sub>0.4</sub>Ce<sub>0.3</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Mn<sub>x</sub>Co<sub>0.525</sub> (x = 0.1-0.4))
- IT **781676-75-3 781676-76-4 781676-77-5 781676-78-6**  
(electrochem. study of **hydrogen storage** alloys La<sub>0.4</sub>Ce<sub>0.3</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Mn<sub>x</sub>Co<sub>0.525</sub> (x = 0.1-0.4))
- IT 55070-72-9, **Nickel hydroxide oxide**  
(electrochem. study of **hydrogen storage** alloys La<sub>0.4</sub>Ce<sub>0.3</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Mn<sub>x</sub>Co<sub>0.525</sub> (x = 0.1-0.4))
- IT 1310-58-3, Potassium hydroxide, uses  
(electrochem. study of **hydrogen storage** alloys La<sub>0.4</sub>Ce<sub>0.3</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Mn<sub>x</sub>Co<sub>0.525</sub> (x = 0.1-0.4))
- IT 12142-63-1 12196-72-4 781676-79-7  
(electrochem. study of **hydrogen storage** alloys La<sub>0.4</sub>Ce<sub>0.3</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Mn<sub>x</sub>Co<sub>0.525</sub> (x = 0.1-0.4))
- IT 7440-02-0, Carbonyl nickel, uses  
(powd.; electrochem. study of **hydrogen storage** alloys La<sub>0.4</sub>Ce<sub>0.3</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Mn<sub>x</sub>Co<sub>0.525</sub> (x = 0.1-0.4))

L45 ANSWER 9 OF 42 HCA COPYRIGHT 2005 ACS on STN

141:382004 A study on the structure and electrochemical properties of La<sub>2</sub>Mg(Ni<sub>0.95</sub>Mo<sub>0.05</sub>)<sub>9</sub> (M = Co, Mn, Fe, Al, Cu, Sn) **hydrogen storage** electrode alloys. Liao, B.; Lei, Y. Q.; Chen, L.



X.; Lu, G. L.; Pan, H. G.; Wang, Q. D. (Department of Materials Science and Engineering, Zhejiang University, Hangzhou, 310027, Peop. Rep. China). Journal of Alloys and Compounds, 376(1-2), 186-195 (English) 2004. CODEN: JALCEU. ISSN: 0925-8388. Publisher: Elsevier Science B.V..

AB The effect of replacing part of the Ni by a metallic element in La<sub>2</sub>MgNi<sub>9</sub> on the structure and electrochem. properties of the thus formed La<sub>2</sub>Mg(Ni<sub>0.95</sub>M<sub>0.05</sub>)<sub>9</sub> quaternary alloys (M = Co, Mn, Fe, Al, Cu, Sn) was investigated. The substitutions did not change the main phase structure (the hexagonal PuNi<sub>3</sub>-type structure), but all increased the unit cell vol. of the alloys except the Sn substituted one, in which some LaNiSn second phase was formed. All hydrides of the alloys preserved the PuNi<sub>3</sub>-type structure, while the amorphization of a portion of the hydride of the Al substituted alloy was obsd. The substitution led to some decrease in hydrogen capacity, and an increase in hydride stability except for the Sn substituted one, and led to some decrease in both the discharge capacity and in the high-rate dischargeability (HRD), but led to a noticeable improvement in cycling stability for most of the substituted alloys (except for the Sn substituted one). The decrease of the high-rate dischargeability was due to the decrease of the electrocatalytic activity of the alloy electrodes and the lower diffusibility of hydrogen in the bulk of alloys as a result of the relatively low stability of the hydrides. The improvement in cycling stability was ascribed to the lower unit vol. change on hydriding and the formation of a corrosion resistant layer on the alloy surface.

IT **12054-48-7, Nickel hydroxide (Ni(OH)<sub>2</sub>)**  
(structure and electrochem. properties of **hydrogen storage** electrode alloys LaMg(Ni.M.) (M = Co, Mn, Fe, Al, Cu, Sn))

RN 12054-48-7 HCA

CN Nickel hydroxide (Ni(OH)<sub>2</sub>) (8CI, 9CI) (CA INDEX NAME)

HO-Ni-OH

IT **1333-74-0, Hydrogen, uses**  
(structure and electrochem. properties of **hydrogen storage** electrode alloys La<sub>2</sub>Mg(Ni<sub>0.95</sub>M<sub>0.05</sub>)<sub>9</sub> (M = Co, Mn, Fe, Al, Cu, Sn))

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

IT 781672-23-9 781672-25-1 781672-27-3  
 781672-29-5 781672-31-9 781672-33-1

(structure and electrochem. properties of **hydrogen**  
**storage** electrode alloys  $\text{La}_2\text{Mg}(\text{Ni}_{0.95}\text{M}_{0.05})_9$  (M = Co, Mn,  
 Fe, Al, Cu, Sn))

RN 781672-23-9 HCA

CN Nickel alloy, base, Ni 60,La 33,Co 3.2,Mg 2.9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	60	7440-02-0
La	33	7439-91-0
Co	3.2	7440-48-4
Mg	2.9	7439-95-4

RN 781672-25-1 HCA

CN Nickel alloy, base, Ni 61,La 34,Mn 3,Mg 2.9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0
La	34	7439-91-0
Mn	3	7439-96-5
Mg	2.9	7439-95-4

RN 781672-27-3 HCA

CN Nickel alloy, base, Ni 61,La 34,Fe 3,Mg 2.9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0
La	34	7439-91-0
Fe	3	7439-89-6
Mg	2.9	7439-95-4

RN 781672-29-5 HCA

CN Nickel alloy, base, Ni 61,La 34,Mg 3,Al 1.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0
La	34	7439-91-0
Mg	3	7439-95-4
Al	1.5	7429-90-5

RN 781672-31-9 HCA  
 CN Nickel alloy, base, Ni 60,La 33,Cu 3.4,Mg 2.9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	60	7440-02-0
La	33	7439-91-0
Cu	3.4	7440-50-8
Mg	2.9	7439-95-4

RN 781672-33-1 HCA  
 CN Nickel alloy, base, Ni 59,La 32,Sn 6.2,Mg 2.8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	32	7439-91-0
Sn	6.2	7440-31-5
Mg	2.8	7439-95-4

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 49, 55, 56

ST **hydrogen storage** alloy lanthanum magnesium  
 nickel transition metal

IT Stability  
 (cycling; structure and electrochem. properties of  
**hydrogen storage** electrode alloys  
 La<sub>2</sub>Mg(Ni<sub>0.95</sub>M<sub>0.05</sub>)<sub>9</sub> (M = Co, Mn, Fe, Al, Cu, Sn))

IT Current density  
 (discharge; structure and electrochem. properties of  
**hydrogen storage** electrode alloys  
 La<sub>2</sub>Mg(Ni<sub>0.95</sub>M<sub>0.05</sub>)<sub>9</sub> (M = Co, Mn, Fe, Al, Cu, Sn))

IT Secondary **batteries**  
 (nickel-metal hydride, anodes; structure and electrochem.  
 properties of **hydrogen storage** electrode  
 alloys La<sub>2</sub>Mg(Ni<sub>0.95</sub>M<sub>0.05</sub>)<sub>9</sub> (M = Co, Mn, Fe, Al, Cu, Sn))

IT Diffusion  
 Storage  
 (structure and electrochem. properties of **hydrogen**  
**storage** electrode alloys La<sub>2</sub>Mg(Ni<sub>0.95</sub>M<sub>0.05</sub>)<sub>9</sub> (M = Co, Mn,  
 Fe, Al, Cu, Sn))

IT Alloys, uses  
 Hydrides  
 (structure and electrochem. properties of **hydrogen**  
**storage** electrode alloys La<sub>2</sub>Mg(Ni<sub>0.95</sub>M<sub>0.05</sub>)<sub>9</sub> (M = Co, Mn,

- Fe, Al, Cu, Sn))
- IT 7440-02-0, Carbonyl nickel, uses  
(powd.; structure and electrochem. properties of **hydrogen storage** electrode alloys  $\text{La}_2\text{Mg}(\text{Ni}_{0.95}\text{M}_{0.05})_9$  (M = Co, Mn, Fe, Al, Cu, Sn))
- IT 12054-48-7, **Nickel hydroxide (Ni(OH)<sub>2</sub>)**  
(structure and electrochem. properties of **hydrogen storage** electrode alloys  $\text{LaMg}(\text{Ni.M.})$  (M = Co, Mn, Fe, Al, Cu, Sn))
- IT 1333-74-0, Hydrogen, uses  
(structure and electrochem. properties of **hydrogen storage** electrode alloys  $\text{La}_2\text{Mg}(\text{Ni}_{0.95}\text{M}_{0.05})_9$  (M = Co, Mn, Fe, Al, Cu, Sn))
- IT 781672-23-9 781672-24-0 781672-25-1  
781672-26-2 781672-27-3 781672-28-4, Iron lanthanum magnesium nickel hydride ( $\text{Fe}_{0.45}\text{La}_2\text{MgNi}_{8.55}\text{H}_{11.1}$ )  
781672-29-5 781672-30-8 781672-31-9  
781672-32-0 781672-33-1 781672-35-3, Lanthanum magnesium nickel tin hydride ( $\text{La}_2\text{MgNi}_{8.55}\text{Sn}_{0.45}\text{H}_{10.7}$ )  
(structure and electrochem. properties of **hydrogen storage** electrode alloys  $\text{La}_2\text{Mg}(\text{Ni}_{0.95}\text{M}_{0.05})_9$  (M = Co, Mn, Fe, Al, Cu, Sn))
- IT 55070-72-9, **Nickel hydroxide oxide**  
(structure and electrochem. properties of **hydrogen storage** electrode alloys  $\text{La}_2\text{Mg}(\text{Ni}_{0.95}\text{M}_{0.05})_9$  (M = Co, Mn, Fe, Al, Cu, Sn))
- IT 1310-58-3, Potassium hydroxide, uses  
(structure and electrochem. properties of **hydrogen storage** electrode alloys  $\text{La}_2\text{Mg}(\text{Ni}_{0.95}\text{M}_{0.05})_9$  (M = Co, Mn, Fe, Al, Cu, Sn))
- IT 12142-63-1 12196-72-4 509152-56-1 781672-34-2  
(structure and electrochem. properties of **hydrogen storage** electrode alloys  $\text{La}_2\text{Mg}(\text{Ni}_{0.95}\text{M}_{0.05})_9$  (M = Co, Mn, Fe, Al, Cu, Sn))

L45 ANSWER 10 OF 42 HCA COPYRIGHT 2005 ACS on STN

141:317195 **H-absorbing** alloy for secondary alkaline

**battery** and the **battery**. Yasuoka, Shigekazu;

Murata, Tetsuyuki; Ishida, Jun (Sanyo Electric Co., Ltd., Japan).

Jpn. Kokai Tokkyo Koho JP 2004273346 A2 20040930, 9 pp. (Japanese).

CODEN: JKXXAF. APPLICATION: JP 2003-64676 20030311.

AB The alloy contains rare earth elements, Mg, Ni and Al; and satisfies  $d/(a+b) \geq 0.1$ ,  $b/c \leq 0.06$ , and  $b/(a+b) = 0.15-0.19$  (a, b, c, and d are compn. ratio of rare earth elements, Mg, Ni and Al, resp.). The **battery** has a cathode, an anode using the above alloy, and an alk. electrolyte soln.

IT 717103-08-7 717103-14-5 765900-26-3

765900-28-5 765900-29-6 765900-30-9  
 765900-31-0 765900-33-2 765900-35-4  
 765900-36-5 765900-37-6

(comps. of **H-absorbing** alloys contg. rare  
 earth elements, Mg, Ni and Al with controlled ratio for secondary  
 alk. **battery** anodes)

RN 717103-08-7 HCA

CN Nickel alloy, base, Ni 60,Nd 15,Pr 15,La 7.6,Mg 1.3,Al 0.9 (9CI)  
 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	60	7440-02-0
Nd	15	7440-00-8
Pr	15	7440-10-0
La	7.6	7439-91-0
Mg	1.3	7439-95-4
Al	0.9	7429-90-5

RN 717103-14-5 HCA

CN Nickel alloy, base, Ni 59,Nd 15,Pr 15,La 7.6,Al 1.7,Mg 1.3 (9CI)  
 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
Nd	15	7440-00-8
Pr	15	7440-10-0
La	7.6	7439-91-0
Al	1.7	7429-90-5
Mg	1.3	7439-95-4

RN 765900-26-3 HCA

CN Nickel alloy, base, Ni 60,Nd 15,Pr 15,La 7.3,Al 1.7,Mg 1.1 (9CI)  
 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	60	7440-02-0
Nd	15	7440-00-8
Pr	15	7440-10-0
La	7.3	7439-91-0
Al	1.7	7429-90-5
Mg	1.1	7439-95-4

RN 765900-28-5 HCA

CN Nickel alloy, base, Ni 58,Nd 16,Pr 15,La 7.7,Al 1.9,Mg 1.2 (9CI)  
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	58	7440-02-0
Nd	16	7440-00-8
Pr	15	7440-10-0
La	7.7	7439-91-0
Al	1.9	7429-90-5
Mg	1.2	7439-95-4

RN 765900-29-6 HCA

CN Nickel alloy, base, Ni 60,Nd 16,Pr 15,La 7.5,Al 1.5,Mg 1.2 (9CI)  
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	60	7440-02-0
Nd	16	7440-00-8
Pr	15	7440-10-0
La	7.5	7439-91-0
Al	1.5	7429-90-5
Mg	1.2	7439-95-4

RN 765900-30-9 HCA

CN Nickel alloy, base, Ni 60,Nd 19,Pr 18,Al 1.5,Mg 1.3 (9CI) (CA INDEX  
NAME)

Component	Component Percent	Component Registry Number
Ni	60	7440-02-0
Nd	19	7440-00-8
Pr	18	7440-10-0
Al	1.5	7429-90-5
Mg	1.3	7439-95-4

RN 765900-31-0 HCA

CN Nickel alloy, base, Ni 59,Nd 15,Pr 15,La 7.7,Al 2.1,Mg 1.3 (9CI)  
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
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Ni	59	7440-02-0
Nd	15	7440-00-8
Pr	15	7440-10-0
La	7.7	7439-91-0
Al	2.1	7429-90-5
Mg	1.3	7439-95-4

RN 765900-33-2 HCA

CN Nickel alloy, base, Ni 59,Nd 19,Pr 19,Al 2,Mg 1.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Ni	59	7440-02-0
Nd	19	7440-00-8
Pr	19	7440-10-0
Al	2	7429-90-5
Mg	1.3	7439-95-4

RN 765900-35-4 HCA

CN Nickel alloy, base, Ni 59,La 15,Nd 12,Pr 12,Al 1.8,Mg 1.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Ni	59	7440-02-0
La	15	7439-91-0
Nd	12	7440-00-8
Pr	12	7440-10-0
Al	1.8	7429-90-5
Mg	1.3	7439-95-4

RN 765900-36-5 HCA

CN Nickel alloy, base, Ni 59,La 23,Pr 7.9,Nd 7.6,Al 1.7,Mg 1.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Ni	59	7440-02-0
La	23	7439-91-0
Pr	7.9	7440-10-0
Nd	7.6	7440-00-8
Al	1.7	7429-90-5
Mg	1.4	7439-95-4

RN 765900-37-6 HCA  
 CN Nickel alloy, base, Ni 60,Nd 15,Pr 15,La 7.3,Mg 1.5,Al 0.9 (9CI)  
 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	60	7440-02-0
Nd	15	7440-00-8
Pr	15	7440-10-0
La	7.3	7439-91-0
Mg	1.5	7439-95-4
Al	0.9	7429-90-5

IC ICM H01M004-38  
 ICS C22C019-00; H01M004-24; H01M010-24  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST secondary alk **battery** anode **hydrogen**  
**absorbing** alloy compn; **hydrogen absorbing**  
 alloy rare earth element magnesium nickel aluminum  
 IT **Battery** anodes  
 Secondary **batteries**  
 (comps. of **H-absorbing** alloys contg. rare  
 earth elements, Mg, Ni and Al with controlled ratio for secondary  
 alk. **battery** anodes)  
 IT 1310-58-3, Potassium hydroxide, uses 7440-02-0, Nickel, uses  
**717103-08-7 717103-14-5 765900-26-3**  
**765900-28-5 765900-29-6 765900-30-9**  
**765900-31-0 765900-33-2 765900-35-4**  
**765900-36-5 765900-37-6**  
 (comps. of **H-absorbing** alloys contg. rare  
 earth elements, Mg, Ni and Al with controlled ratio for secondary  
 alk. **battery** anodes)

L45 ANSWER 11 OF 42 HCA COPYRIGHT 2005 ACS on STN  
 141:317179 Alkaline **battery**. Ishida, Jun; Murata, Tetsuyuki;  
 Yasuoka, Shigekazu (Sanyo Electric Co., Ltd., Japan). Jpn. Kokai  
 Tokkyo Koho JP 2004273261 A2 20040930, 13 pp. (Japanese). CODEN:  
 JKXXAF. APPLICATION: JP 2003-62002 20030307.  
 AB The device comprises a pos. electrode, a neg. electrode made of  
**H absorption** alloy, and alkali electrolyte soln.  
 The **H absorption** alloy contains rare earth  
 element, Mg, and Ni and has a intensity ratio  $I_a/I_b > 0.5$ ,  
 where  $I_a$  is of the strongest peak at  $2.\theta = 30.\text{degree} - 34.\text{degree}$ .  
 measured by x ray refraction and  $I_b$  at  $2.\theta = 40.\text{degree} -$   
 $44.\text{degree}$ . The increment of the O content in the **H**  
**absorption** alloy  $W_o$  to that of activated **battery**  
 $W_a$  ( $W_a - W_o$ )  $\leq 0.9\%$  or their ratio of  $\leq 1.0$  (wt)%.



IT **765835-21-0**  
(H **absorption** alloy; alk. **battery**  
having neg. electrode made of H **absorption**  
alloy)  
RN 765835-21-0 HCA  
CN Nickel alloy, base, Ni 59,Nd 15,Pr 15,La 7.5,Al 1.7,Mg 1.3 (9CI)  
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Ni	59	7440-02-0
Nd	15	7440-00-8
Pr	15	7440-10-0
La	7.5	7439-91-0
Al	1.7	7429-90-5
Mg	1.3	7439-95-4

IC ICM H01M004-38  
ICS B22F005-00; B22F009-04; H01M004-24; H01M010-30; C22C019-00  
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 76  
ST alk **battery hydrogen absorption** alloy  
IT Rare earth metals, uses  
(H **absorption** alloy contg.; alk.  
**battery** having neg. electrode made of H  
**absorption** alloy)  
IT Alloys, uses  
(H **absorption**; alk. **battery** having  
neg. electrode made of H **absorption** alloy)  
IT Primary **batteries**  
(alk.; alk. **battery** having neg. electrode made of  
H **absorption** alloy)  
IT Electrodes  
(neg.; alk. **battery** having neg. electrode made of  
H **absorption** alloy)  
IT 7439-95-4, Magnesium, uses 7440-02-0, Nickel, uses 12310-65-5,  
Ce2Ni7 12409-96-0  
(H **absorption** alloy contg.; alk.  
**battery** having neg. electrode made of H  
**absorption** alloy)  
IT **765835-21-0**  
(H **absorption** alloy; alk. **battery**  
having neg. electrode made of H **absorption**  
alloy)

hydride rechargeable **battery**. Maeda, Takao; Shima, Satoshi; Shinya, Naofumi (Shin-Etsu Chemical Co., Ltd., Japan). Eur. Pat. Appl. EP 1465270 A2 20041006, 14 pp. DESIGNATED STATES: R: DE, FR, GB. (English). CODEN: EPXXDW. APPLICATION: EP 2004-8375 20000724. PRIORITY: JP 1999-221990 19990805; JP 2000-189040 20000623; EP 2000-115026 20000724.

AB An object of the present invention is to provide a **hydrogen absorbing** alloy which can improve a high rate discharge property while suppressing particle size redn., exhibits cycle life characteristics equal to or higher than those of conventional alloys even when its cobalt content is decreased, and has a high capacity. Specifically, the present invention provides a **hydrogen absorbing** alloy having a CaCu5 type crystal structure in its principal phase.

IT 321852-18-0P 321852-19-1P 321852-21-5P  
321852-22-6P 321852-23-7P 321852-24-8P  
321852-25-9P 321852-28-2P 321852-29-3P  
321852-30-6P 321852-31-7P 321852-39-5P  
321852-40-8P 321852-41-9P 321852-42-0P  
765300-36-5P

(**hydrogen absorbing** alloy and nickel-metal hydride rechargeable **battery**)

RN 321852-18-0 HCA

CN Nickel alloy, base, Ni 57,La 25,Co 5.3,Mn 4.6,Ce 3.2,Pr 1.9,Al 1.8,Nd 1.3,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	57	7440-02-0
La	25	7439-91-0
Co	5.3	7440-48-4
Mn	4.6	7439-96-5
Ce	3.2	7440-45-1
Pr	1.9	7440-10-0
Al	1.8	7429-90-5
Nd	1.3	7440-00-8
Mg	0.3	7439-95-4

RN 321852-19-1 HCA

CN Nickel alloy, base, Ni 59,La 26,Ce 3.9,Mn 3.8,Co 2.7,Al 2.4,Nd 1.3,Pr 1.3,Mg 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	26	7439-91-0

Ce	3.9	7440-45-1
Mn	3.8	7439-96-5
Co	2.7	7440-48-4
Al	2.4	7429-90-5
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.2	7439-95-4

RN 321852-21-5 HCA

CN Nickel alloy, base, Ni 59,La 25,Ce 3.8,Mn 3.7,Al 3,Co 2.6,Nd 1.3,Pr 1.3,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	25	7439-91-0
Ce	3.8	7440-45-1
Mn	3.7	7439-96-5
Al	3	7429-90-5
Co	2.6	7440-48-4
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.3	7439-95-4

RN 321852-22-6 HCA

CN Nickel alloy, base, Ni 59,La 25,Mn 5,Ce 3.7,Co 2.6,Al 2.3,Nd 1.3,Pr 1.2,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	25	7439-91-0
Mn	5	7439-96-5
Ce	3.7	7440-45-1
Co	2.6	7440-48-4
Al	2.3	7429-90-5
Nd	1.3	7440-00-8
Pr	1.2	7440-10-0
Mg	0.3	7439-95-4

RN 321852-23-7 HCA

CN Nickel alloy, base, Ni 59,La 27,Ce 3.9,Mn 3.8,Co 2.7,Al 2.3,Nd 1.3,Pr 1.3,Mg 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
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=====+=====+=====
Ni          59          7440-02-0
La          27          7439-91-0
Ce          3.9         7440-45-1
Mn          3.8         7439-96-5
Co          2.7         7440-48-4
Al          2.3         7429-90-5
Nd          1.3         7440-00-8
Pr          1.3         7440-10-0
Mg          0.2         7439-95-4

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RN 321852-24-8 HCA

CN Nickel alloy, base, Ni 59,La 26,Ce 3.9,Mn 3.8,Co 2.7,Al 2.4,Nd  
1.3,Pr 1.3,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	26	7439-91-0
Ce	3.9	7440-45-1
Mn	3.8	7439-96-5
Co	2.7	7440-48-4
Al	2.4	7429-90-5
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.3	7439-95-4

RN 321852-25-9 HCA

CN Nickel alloy, base, Ni 59,La 25,Mn 4.4,Ce 3.8,Co 2.6,Al 2.4,Nd  
1.3,Pr 1.3,Mg 0.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	25	7439-91-0
Mn	4.4	7439-96-5
Ce	3.8	7440-45-1
Co	2.6	7440-48-4
Al	2.4	7429-90-5
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.6	7439-95-4

RN 321852-28-2 HCA

CN Nickel alloy, base, Ni 56,La 26,Co 5.4,Ce 3.9,Mn 3.8,Al 2.4,Nd  
1.3,Pr 1.3,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	56	7440-02-0
La	26	7439-91-0
Co	5.4	7440-48-4
Ce	3.9	7440-45-1
Mn	3.8	7439-96-5
Al	2.4	7429-90-5
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.3	7439-95-4

RN 321852-29-3 HCA

CN Nickel alloy, base, Ni 54,La 25,Co 8.6,Ce 3.8,Mn 3.8,Al 1.9,Nd 1.3,Pr 1.3,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	54	7440-02-0
La	25	7439-91-0
Co	8.6	7440-48-4
Ce	3.8	7440-45-1
Mn	3.8	7439-96-5
Al	1.9	7429-90-5
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.3	7439-95-4

RN 321852-30-6 HCA

CN Nickel alloy, base, Ni 58,La 25,Mn 4.5,Co 4,Ce 3.8,Al 2,Nd 1.3,Pr 1.3,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	58	7440-02-0
La	25	7439-91-0
Mn	4.5	7439-96-5
Co	4	7440-48-4
Ce	3.8	7440-45-1
Al	2	7429-90-5
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.3	7439-95-4

RN 321852-31-7 HCA  
CN Nickel alloy, base, Ni 56,La 25,Co 5.3,Mn 4.8,Ce 3.8,Al 1.8,Nd  
1.3,Pr 1.3,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	56	7440-02-0
La	25	7439-91-0
Co	5.3	7440-48-4
Mn	4.8	7439-96-5
Ce	3.8	7440-45-1
Al	1.8	7429-90-5
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.3	7439-95-4

RN 321852-39-5 HCA  
CN Nickel alloy, base, Ni 54,La 30,Co 8.1,Mn 3.8,Al 1.9,Ce 1,Mg 0.3,Nd  
0.3,Pr 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	54	7440-02-0
La	30	7439-91-0
Co	8.1	7440-48-4
Mn	3.8	7439-96-5
Al	1.9	7429-90-5
Ce	1	7440-45-1
Mg	0.3	7439-95-4
Nd	0.3	7440-00-8
Pr	0.3	7440-10-0

RN 321852-40-8 HCA  
CN Nickel alloy, base, Ni 54,La 29,Co 8.1,Mn 3.8,Ce 2.6,Al 1.9,Mg  
0.3,Nd 0.3,Pr 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	54	7440-02-0
La	29	7439-91-0
Co	8.1	7440-48-4
Mn	3.8	7439-96-5
Ce	2.6	7440-45-1
Al	1.9	7429-90-5
Mg	0.3	7439-95-4

Nd	0.3	7440-00-8
Pr	0.3	7440-10-0

RN 321852-41-9 HCA

CN Nickel alloy, base, Ni 54,La 27,Co 8.1,Ce 3.9,Mn 3.8,Al 1.9,Pr 0.6,Mg 0.3,Nd 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Ni	54	7440-02-0
La	27	7439-91-0
Co	8.1	7440-48-4
Ce	3.9	7440-45-1
Mn	3.8	7439-96-5
Al	1.9	7429-90-5
Pr	0.6	7440-10-0
Mg	0.3	7439-95-4
Nd	0.3	7440-00-8

RN 321852-42-0 HCA

CN Nickel alloy, base, Ni 54,La 24,Co 8.1,Ce 6.4,Mn 3.8,Al 1.9,Pr 1,Nd 0.7,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Ni	54	7440-02-0
La	24	7439-91-0
Co	8.1	7440-48-4
Ce	6.4	7440-45-1
Mn	3.8	7439-96-5
Al	1.9	7429-90-5
Pr	1	7440-10-0
Nd	0.7	7440-00-8
Mg	0.3	7439-95-4

RN 765300-36-5 HCA

CN Nickel alloy, base, Ni 59,La 25,Mn 4.5,Ce 3.8,Co 2.7,Al 2.4,Nd 1.3,Pr 1.3,Mg 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Ni	59	7440-02-0
La	25	7439-91-0
Mn	4.5	7439-96-5
Ce	3.8	7440-45-1

Co	2.7	7440-48-4
Al	2.4	7429-90-5
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.2	7439-95-4

IT **1333-74-0, Hydrogen, uses**  
**(hydrogen absorbing alloy and nickel-metal**  
**hydride rechargeable battery)**

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

IC ICM H01M004-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 56

ST **hydrogen absorbing alloy nickel metal hydride**  
**rechargeable battery**

IT **Battery anodes**  
**Secondary batteries**  
**(hydrogen absorbing alloy and nickel-metal**  
**hydride rechargeable battery)**

IT Alloys, uses  
**(hydrogen absorbing alloys; hydrogen**  
**absorbing alloy and nickel-metal hydride rechargeable**  
**battery)**

IT **321852-18-0P 321852-19-1P 321852-21-5P**  
**321852-22-6P 321852-23-7P 321852-24-8P**  
**321852-25-9P 321852-28-2P 321852-29-3P**  
**321852-30-6P 321852-31-7P 321852-32-8P**  
321852-33-9P 321852-34-0P 321852-35-1P 321852-36-2P  
321852-37-3P 321852-38-4P **321852-39-5P**  
**321852-40-8P 321852-41-9P 321852-42-0P**  
321852-43-1P 321852-44-2P 321852-45-3P 321852-46-4P  
**765300-36-5P 765300-37-6P**  
**(hydrogen absorbing alloy and nickel-metal**  
**hydride rechargeable battery)**

IT **1333-74-0, Hydrogen, uses**  
**(hydrogen absorbing alloy and nickel-metal**  
**hydride rechargeable battery)**

L45 ANSWER 13 OF 42 HCA COPYRIGHT 2005 ACS on STN

141:193074 **Hydrogen absorbing alloy anode for**  
**nickel-metal hydride battery.** Murata, Tetsuyuki; Yasuoka,  
Shigekazu; Ishida, Jun (Japan). U.S. Pat. Appl. Publ. US 2004170896  
A1 20040902, 7 pp. (English). CODEN: USXXCO. APPLICATION: US



2004-787593 20040227. PRIORITY: JP 2003-52612 20030228.

AB The invention concerns a **hydrogen absorbing** alloy contg. at least a rare-earth element, Mg, Ni and Al, having an intensity ratio (IA/IB) of not smaller than 0.6 (where IA represents an intensity of the highest peak in a range of 2.theta. = 30-34.degree. in the X-ray diffraction pattern using CuK.alpha.-radiation as the X-ray source and IB represents the intensity of the highest peak in a range of 2.theta. = 40-44.degree.), and not substantially including La as the rare-earth element.

IT **11113-74-9, Nickel hydroxide**  
(**hydrogen absorbing** alloy anode for  
nickel-metal hydride **battery**)

RN 11113-74-9 HCA

CN Nickel hydroxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
HO	x	14280-30-9
Ni	x	7440-02-0

IT **740835-13-6**  
(**hydrogen absorbing** alloy anode for  
nickel-metal hydride **battery**)

RN 740835-13-6 HCA

CN Nickel alloy, base, Ni 60,Nd 19,Pr 19,Mg 1.3,Al 0.9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	60	7440-02-0
Nd	19	7440-00-8
Pr	19	7440-10-0
Mg	1.3	7439-95-4
Al	0.9	7429-90-5

IT **1333-74-0, Hydrogen**, uses  
(**hydrogen absorbing** alloy anode for  
nickel-metal hydride **battery**)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

IC ICM H01M004-58

- ICS H01M010-34
- INCL 429218200; 429059000; 148409000; 420900000
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 56
- ST **hydrogen absorbing** alloy anode nickel metal  
hydride **battery**
- IT **Battery** anodes  
Secondary **batteries**  
(**hydrogen absorbing** alloy anode for  
nickel-metal hydride **battery**)
- IT Alloys, uses  
(**hydrogen absorbing** alloy anode for  
nickel-metal hydride **battery**)
- IT Polyoxyalkylenes, uses  
(**hydrogen absorbing** alloy anode for  
nickel-metal hydride **battery**)
- IT **11113-74-9, Nickel hydroxide**  
(**hydrogen absorbing** alloy anode for  
nickel-metal hydride **battery**)
- IT **740835-13-6**  
(**hydrogen absorbing** alloy anode for  
nickel-metal hydride **battery**)
- IT 9003-39-8, Polyvinylpyrrolidone 25322-68-3, Peo  
(**hydrogen absorbing** alloy anode for  
nickel-metal hydride **battery**)
- IT **1333-74-0, Hydrogen**, uses  
(**hydrogen absorbing** alloy anode for  
nickel-metal hydride **battery**)
- L45 ANSWER 14 OF 42 HCA COPYRIGHT 2005 ACS on STN
- 141:143912 Electrochemical properties of Mg-based alloys containing  
carbon nanotubes. Wang, F. X.; Gao, X. P.; Lu, Z. W.; Ye, S. H.;  
Qu, J. Q.; Wu, F.; Yuan, H. T.; Song, D. Y. (N&T Joint Academy,  
Institute of New Energy Material Chemistry, Nankai University,  
Tianjin, 300071, Peop. Rep. China). Journal of Alloys and  
Compounds, 370(1-2), 326-330 (English) 2004. CODEN: JALCEU. ISSN:  
0925-8388. Publisher: Elsevier Science B.V..
- AB The effects of partial substitution of Mg and Ni with AB2 in Mg  
alloys and subsequent surface modification by further ball milling  
with carbon nanotubes on the electrochem. properties were  
investigated. Mg<sub>1.9</sub>(AB<sub>2</sub>)<sub>0.1</sub>Ni<sub>0.8</sub> alloys with AB<sub>2</sub> being LaNi<sub>2</sub>,  
LaNiCo and LaNiMn were prep'd. by solid-state diffusion. The  
nanocryst. Mg alloys were prep'd. by ball milling the mixt. of the  
obtained Mg<sub>1.9</sub>(AB<sub>2</sub>)<sub>0.1</sub>Ni<sub>0.8</sub> alloys and nickel powder. The  
electrochem. capacities of the nanocryst. Mg<sub>1.9</sub>(AB<sub>2</sub>)<sub>0.1</sub>Ni<sub>1.8</sub> alloys  
were 460-490 mA-h/g. The nanocryst. Mg alloy composites contg. 10  
wt.% carbon nanotubes were obtained by ball milling for 60 min and  
had improved electrochem. properties with respect to the original

nanocryst. Mg alloys. The electrochem. reaction activity was detected by electrochem. impedance spectroscopy. Raman and XPS proved the interaction between Mg<sub>1.9</sub>(AB<sub>2</sub>)<sub>0.1</sub>Ni<sub>1.8</sub> alloys and carbon nanotubes after ball milling and resulted in an increase in the surface Ni/Mg ratio.

IT **727716-29-2 727716-30-5**

(composites; electrochem. properties of Mg alloys contg. carbon nanotubes)

RN 727716-29-2 HCA

CN Nickel alloy, base, Ni 67,Mg 29,La 2.8,Co 1.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	67	7440-02-0
Mg	29	7439-95-4
La	2.8	7439-91-0
Co	1.2	7440-48-4

RN 727716-30-5 HCA

CN Nickel alloy, base, Ni 67,Mg 29,La 2.8,Mn 1.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	67	7440-02-0
Mg	29	7439-95-4
La	2.8	7439-91-0
Mn	1.1	7439-96-5

IT **1333-74-0**, Hydrogen, uses

(electrochem. properties of Mg alloys contg. carbon nanotubes for storage of)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

IT **7440-44-0**, Carbon, properties

(nanotubes, composites; electrochem. properties of Mg alloys contg. carbon nanotubes)

RN 7440-44-0 HCA

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

- CC 56-4 (Nonferrous Metals and Alloys)  
Section cross-reference(s): 52
- IT 727716-28-1 **727716-29-2 727716-30-5**  
(composites; electrochem. properties of Mg alloys contg. carbon nanotubes)
- IT **1333-74-0**, Hydrogen, uses  
(electrochem. properties of Mg alloys contg. carbon nanotubes for storage of)
- IT **7440-44-0**, Carbon, properties  
(nanotubes, composites; electrochem. properties of Mg alloys contg. carbon nanotubes)
- L45 ANSWER 15 OF 42 HCA COPYRIGHT 2005 ACS on STN  
141:143158 Study on a low-cobalt  $M_{10.8}Mg_{0.2}Ni_{3.2}Co_{0.3}Al_{0.3}$  alloy. Tang, Rui; Zhang, Zhaohui; Liu, Liqin; Liu, Yongning; Zhu, Jiewu; Yu, Guang (School Material Science and Engineering, State Key Laboratory for Mechanical Behavior of Materials, Xian Jiaotong University, Xian, 710049, Peop. Rep. China). International Journal of Hydrogen Energy, 29(8), 851-858 (English) 2004. CODEN: IJHEDX. ISSN: 0360-3199. Publisher: Elsevier Science Ltd..
- AB A low-Co  $M_{10.8}Mg_{0.2}Ni_{3.2}Co_{0.3}Al_{0.3}$  alloy ( $M_1$  = lanthanum-rich mischmetal) was prepd. and studied by examg. the alloy structure, phase compn., **hydrogen absorption**/desorption and electrochem. properties. The alloy is composed of Mg-free  $LaNi_5$  phase as matrix and Mg-contained  $LaNi_3$  phase as secondary phase. The **hydrogen storage** capacity (1.37%) at 298 .degree.K, discharge capacity (320 mA h/g) and cycling stability (88% of the initial capacity remained after 300 charge/discharge cycles) of the alloy are as good as those of the com.  $M_{10.8}Mg_{0.2}Ni_{3.2}Co_{0.3}Al_{0.3}$  alloy. However, the high-rate discharge ability is better than that of the com. alloy. The Mn-free compn. is advantageous to the oxidization-resistant performance of the alloy. The secondary phase is tougher than the matrix, which not only contributes to the high-rate discharge ability, but also improves the fracture ductility and depresses the disintegration during charge/discharge cycle.
- IT **1333-74-0**, Hydrogen, processes  
(**absorption**/desorption of; low-cobalt  $M_{10.8}Mg_{0.2}Ni_{3.2}Co_{0.3}Al_{0.3}$  alloy as **hydrogen storage battery** cathode)
- RN 1333-74-0 HCA
- CN Hydrogen (8CI, 9CI) (CA INDEX NAME)
- H—H
- IT **12054-48-7**, Nickel hydroxide (Ni (OH)2)

(low-cobalt M10.8Mg0.2Ni3.2Co0.3Al0.3 alloy as **hydrogen storage battery** cathode)

RN 12054-48-7 HCA

CN Nickel hydroxide (Ni(OH)2) (8CI, 9CI) (CA INDEX NAME)

HO-Ni-OH

IT **727651-29-8**

(secondary phase in M10.8Mg0.2Ni3.2Co0.3Al0.3; low-cobalt M10.8Mg0.2Ni3.2Co0.3Al0.3 alloy as **hydrogen storage battery** cathode)

RN 727651-29-8 HCA

CN Nickel alloy, base, Ni 59,La 20,Pr 9.8,Mg 4.5,Co 3.8,Al 2.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Ni	59	7440-02-0
La	20	7439-91-0
Pr	9.8	7440-10-0
Mg	4.5	7439-95-4
Co	3.8	7440-48-4
Al	2.3	7429-90-5

CC 52-3 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 56, 72, 75, 76

ST lanthanum misch metal nickel alloy secondary **battery**  
cathode hydriding

IT Surface damage  
(crazing; low-cobalt M10.8Mg0.2Ni3.2Co0.3Al0.3 alloy as **hydrogen storage battery** cathode)

IT Current density  
(effect on high-rate discharge ability and overpotential;  
low-cobalt M10.8Mg0.2Ni3.2Co0.3Al0.3 alloy as **hydrogen storage battery** cathode)

IT Secondary **batteries**  
(hydride; low-cobalt M10.8Mg0.2Ni3.2Co0.3Al0.3 alloy as **hydrogen storage battery** cathode)

IT **Battery** cathodes  
Cathodic polarization  
Ductility  
Fracture toughness  
Overvoltage

(low-cobalt M10.8Mg0.2Ni3.2Co0.3Al0.3 alloy as **hydrogen storage battery** cathode)

IT Electric energy

(potential and cycle nos. vs. discharge capacity of alloys;  
low-cobalt M10.8Mg0.2Ni3.2Co0.3Al0.3 alloy as **hydrogen**  
**storage battery** cathode)

- IT Crazeing  
(surface; low-cobalt M10.8Mg0.2Ni3.2Co0.3Al0.3 alloy as  
**hydrogen storage battery** cathode)
- IT 1333-74-0, **Hydrogen**, processes  
(**absorption**/desorption of; low-cobalt  
M10.8Mg0.2Ni3.2Co0.3Al0.3 alloy as **hydrogen**  
**storage battery** cathode)
- IT 181147-99-9P 727651-27-6P  
(cathode material; low-cobalt M10.8Mg0.2Ni3.2Co0.3Al0.3 alloy as  
**hydrogen storage battery** cathode)
- IT 1310-58-3, Potassium hydroxide, uses  
(low-cobalt M10.8Mg0.2Ni3.2Co0.3Al0.3 alloy as **hydrogen**  
**storage battery** cathode)
- IT 12054-48-7, **Nickel hydroxide** (Ni  
(OH)2)  
(low-cobalt M10.8Mg0.2Ni3.2Co0.3Al0.3 alloy as **hydrogen**  
**storage battery** cathode)
- IT 727651-28-7  
(majority matrix phase in M10.8Mg0.2Ni3.2Co0.3Al0.3; low-cobalt  
M10.8Mg0.2Ni3.2Co0.3Al0.3 alloy as **hydrogen**  
**storage battery** cathode)
- IT 7440-02-0, **Nickel**, uses  
(porous foam, electrode support; low-cobalt  
M10.8Mg0.2Ni3.2Co0.3Al0.3 alloy as **hydrogen**  
**storage battery** cathode)
- IT 727651-29-8  
(secondary phase in M10.8Mg0.2Ni3.2Co0.3Al0.3; low-cobalt  
M10.8Mg0.2Ni3.2Co0.3Al0.3 alloy as **hydrogen**  
**storage battery** cathode)

L45 ANSWER 16 OF 42 HCA COPYRIGHT 2005 ACS on STN

141:126392 Alkaline **battery** with **hydrogen**

**absorbing** alloy anode. Yasuoka, Shigekazu; Murata,  
Tetsuyuki; Ishida, Jun (Sanyo Electric Co., Japan). U.S. Pat. Appl.  
Publ. US 2004146782 A1 20040729, 6 pp. (English). CODEN: USXXCO.  
APPLICATION: US 2004-758541 20040116. PRIORITY: JP 2003-8976  
20030117.

AB An alk. storage **battery** having a neg. electrode made from  
a **hydrogen absorbing** alloy represented by the  
formula  $Ln_{1-x}Mg_xNi_y-aMa$  (where Ln is at least one element selected  
from rare earth elements, M is at least one element selected from  
the group consisting of Al, V, Nb, Ta, Cr, Mo, Mn, Fe, Co, Ga, Zn,  
Sn, In, Cu, Si and P,  $0.05 \leq x < 0.20$ ,  $2.8 \leq y \leq 3.9$   
and  $0.10 \leq a \leq 0.50$ ) and carbon as a conductive agent, a  
pos. electrode of **nickel hydroxide** as an active

material, and an alk. electrolyte, and the alk. storage **battery** contains not greater than 0.01 wt.% of hydrogen or not greater than 0.13 wt.% of water in the **hydrogen absorbing** alloy when the **battery** is activated and is discharged to 1.0 V at one hour rate.

IT **1333-74-0**, Hydrogen, uses  
(alk. **battery** with **hydrogen absorbing**  
alloy anode)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

IT **11113-74-9**, Nickel hydroxide  
(alk. **battery** with **hydrogen absorbing**  
alloy anode)

RN 11113-74-9 HCA

CN Nickel hydroxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
HO	x	14280-30-9
Ni	x	7440-02-0

IT **717103-08-7P 717103-14-5P 721923-25-7P**  
(alk. **battery** with **hydrogen absorbing**  
alloy anode)

RN 717103-08-7 HCA

CN Nickel alloy, base, Ni 60,Nd 15,Pr 15,La 7.6,Mg 1.3,Al 0.9 (9CI)  
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	60	7440-02-0
Nd	15	7440-00-8
Pr	15	7440-10-0
La	7.6	7439-91-0
Mg	1.3	7439-95-4
Al	0.9	7429-90-5

RN 717103-14-5 HCA

CN Nickel alloy, base, Ni 59,Nd 15,Pr 15,La 7.6,Al 1.7,Mg 1.3 (9CI)  
(CA INDEX NAME)

Component Component Component

	Percent	Registry Number
=====+=====+=====		
Ni	59	7440-02-0
Nd	15	7440-00-8
Pr	15	7440-10-0
La	7.6	7439-91-0
Al	1.7	7429-90-5
Mg	1.3	7439-95-4

RN 721923-25-7 HCA

CN Nickel alloy, base, Ni 60,Nd 20,La 9.3,Pr 5.9,Ce 2.2,Mg 1.3,Al 0.9  
(9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Ni	60	7440-02-0
Nd	20	7440-00-8
La	9.3	7439-91-0
Pr	5.9	7440-10-0
Ce	2.2	7440-45-1
Mg	1.3	7439-95-4
Al	0.9	7429-90-5

IT **7440-44-0**, Carbon, uses  
(alk. **battery** with **hydrogen absorbing**  
alloy anode)

RN 7440-44-0 HCA

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IC ICM H01M004-58

ICS H01M004-40; H01M004-62

INCL 429218200; 429232000; 429231950

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 56

ST **battery** alk **hydrogen absorbing** alloy  
anode

IT **Battery** anodes  
Secondary **batteries**  
(alk. **battery** with **hydrogen absorbing**  
alloy anode)

IT Carbon black, uses  
(alk. **battery** with **hydrogen absorbing**  
alloy anode)

IT Alloys, uses



- (**hydrogen-absorbing**; alk. **battery**  
with **hydrogen absorbing** alloy anode)
- IT 1333-74-0, Hydrogen, uses  
(alk. **battery** with **hydrogen absorbing**  
alloy anode)
- IT 11113-74-9, Nickel hydroxide  
(alk. **battery** with **hydrogen absorbing**  
alloy anode)
- IT 717103-08-7P 717103-14-5P 721923-25-7P  
(alk. **battery** with **hydrogen absorbing**  
alloy anode)
- IT 7440-44-0, Carbon, uses  
(alk. **battery** with **hydrogen absorbing**  
alloy anode)

L45 ANSWER 17 OF 42 HCA COPYRIGHT 2005 ACS on STN

141:91882 **Hydrogen absorbing** alloy for alkaline  
**battery** anode. Yasuoka, Shigekazu; Ishida, Jun; Murata,  
Tetsuyuki; Nakamura, Hiroshi (Japan). U.S. Pat. Appl. Publ. US  
2004134569 A1 20040715, 11 pp. (English). CODEN: USXXCO.  
APPLICATION: US 2003-743745 20031224. PRIORITY: JP 2002-374140  
20021225; JP 2003-373873 20031104.

AB A **hydrogen absorbing** alloy is represented by the  
formula  $\text{Ln}_{1-x}\text{Mg}_x\text{Ni}_y\text{Al}_z$  (where Ln is at least one element selected  
from rare earth elements,  $0.05 \leq x < 0.20$ ,  
 $2.8 \leq y \leq 3.9$  and  $0.10 \leq z \leq 0.25$ ) which is used  
for an alk. storage **battery**.

IT 717103-09-8P 717103-10-1P 717103-12-3P  
717103-14-5P 717103-21-4P  
(**hydrogen absorbing** alloy for alk.  
**battery** anode)

RN 717103-09-8 HCA

CN Nickel alloy, base, Ni 60, Nd 16, Pr 15, La 7.8, Mg 1.4, Al 0.2 (9CI)  
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	60	7440-02-0
Nd	16	7440-00-8
Pr	15	7440-10-0
La	7.8	7439-91-0
Mg	1.4	7439-95-4
Al	0.2	7429-90-5

RN 717103-10-1 HCA

CN Nickel alloy, base, Ni 58, Nd 15, Pr 15, La 7.7, Al 2.2, Mg 1.3 (9CI)  
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	58	7440-02-0
Nd	15	7440-00-8
Pr	15	7440-10-0
La	7.7	7439-91-0
Al	2.2	7429-90-5
Mg	1.3	7439-95-4

RN 717103-12-3 HCA

CN Nickel alloy, base, Ni 57,Nd 15,Pr 15,La 7.6,Co 1.9,Al 1.7,Mg 1.3  
(9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	57	7440-02-0
Nd	15	7440-00-8
Pr	15	7440-10-0
La	7.6	7439-91-0
Co	1.9	7440-48-4
Al	1.7	7429-90-5
Mg	1.3	7439-95-4

RN 717103-14-5 HCA

CN Nickel alloy, base, Ni 59,Nd 15,Pr 15,La 7.6,Al 1.7,Mg 1.3 (9CI)  
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
Nd	15	7440-00-8
Pr	15	7440-10-0
La	7.6	7439-91-0
Al	1.7	7429-90-5
Mg	1.3	7439-95-4

RN 717103-21-4 HCA

CN Nickel alloy, base, Ni 88,Co 2.9,La 2.8,Al 2,Mg 2,Nd 1.3,Pr 1.3  
(9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	88	7440-02-0

Co	2.9	7440-48-4
La	2.8	7439-91-0
Al	2	7429-90-5
Mg	2	7439-95-4
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0

IT 717103-08-7

(**hydrogen absorbing** alloy for alk.  
**battery** anode)

RN 717103-08-7 HCA

CN Nickel alloy, base, Ni 60, Nd 15, Pr 15, La 7.6, Mg 1.3, Al 0.9 (9CI)  
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Ni	60	7440-02-0
Nd	15	7440-00-8
Pr	15	7440-10-0
La	7.6	7439-91-0
Mg	1.3	7439-95-4
Al	0.9	7429-90-5

IT 1333-74-0, Hydrogen, uses

(**hydrogen absorbing** alloy for alk.  
**battery** anode)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

IC ICM C22C019-03

INCL 148426000

CC 52-3 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 56

ST **hydrogen absorbing** alloy alk **battery**  
anode

IT **Battery** anodesSecondary **batteries**

(**hydrogen absorbing** alloy for alk.  
**battery** anode)

IT **717103-09-8P 717103-10-1P 717103-11-2P**  
**717103-12-3P 717103-13-4P 717103-14-5P**  
717103-15-6P 717103-16-7P 717103-17-8P 717103-18-9P  
717103-19-0P 717103-20-3P **717103-21-4P** 717103-22-5P  
717103-23-6P

- (**hydrogen absorbing** alloy for alk.  
**battery** anode)
- IT 717103-08-7  
(**hydrogen absorbing** alloy for alk.  
**battery** anode)
- IT 1333-74-0, Hydrogen, uses  
(**hydrogen absorbing** alloy for alk.  
**battery** anode)
- IT 7440-02-0, Nickel, uses  
(sintered; **hydrogen absorbing** alloy for alk.  
**battery** anode)
- L45 ANSWER 18 OF 42 HCA COPYRIGHT 2005 ACS on STN  
140:360268 Powdered **hydrogen absorbing** alloy,  
**hydrogen absorbing** anode, and nickel/hydrogen  
**battery** thereof. Kanamoto, Manabu; Kurokuzuhara, Minoru;  
Kodama, Mitsuhiro; Sakamoto, Koichi; Watada, Shoji (Yuasa  
Corporation, Japan). Jpn. Kokai Tokkyo Koho JP 2004124132 A2  
20040422, 18 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
2002-287749 20020930.
- AB The powd. alloy has a CaCu5 cryst. structure, contains La and Ce and  
.gtoreq.1 of Y and lanthanoid metals having at. no .gtoreq.63, Ni  
and/or Co, R1 selected from lanthanoid elements having at. no 59-62,  
R2 selected from Y and lanthanoid elements having at. no.  
.gtoreq.63, and X selected from non-rare earth elements, and has a  
compn. LaaCe3bR1cR2dNieCofXg with (a+b+c+d) =1. 0.6 .ltoreq.a  
.ltoreq.0.9, 0.05 .ltoreq.b 0 .ltoreq.c, 0 <d .ltoreq.0.06, 5.0  
.ltoreq.(e+f+g) .ltoreq.5.4, 0.1 .ltoreq.f .ltoreq.1.2, and 0 <g.,.  
The anode has the powd. alloy loaded on an alk. electrolyte  
resistant substrate. The **battery** uses Ni cathode contg.  
Er, Tm, Yb, Lu, and/or Y.
- IT 12054-48-7, Nickel hydroxide [Ni  
(OH)2]  
(additives in nickel cathodes for hydrogen **batteries**)
- RN 12054-48-7 HCA
- CN Nickel hydroxide (Ni(OH)2) (8CI, 9CI) (CA INDEX NAME)

HO-Ni-OH

- IT 1333-74-0, Hydrogen, uses  
(compns. of powd. **hydrogen absorbing** alloy  
with CaCu5 structure for nickel **battery** anodes)
- RN 1333-74-0 HCA
- CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

IT 681799-93-9 681799-94-0 681799-95-1  
681799-96-2

(compsn. of powd. **hydrogen absorbing** alloy  
with CaCu5 structure for nickel **battery** anodes)

RN 681799-93-9 HCA

CN Nickel alloy, base, Ni 55,La 23,Co 6.9,Ce 6.2,Mn 3.9,Al 2,Nd 1.7,Y  
0.8,Pr 0.3,Fe 0.1,Mg 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	55	7440-02-0
La	23	7439-91-0
Co	6.9	7440-48-4
Ce	6.2	7440-45-1
Mn	3.9	7439-96-5
Al	2	7429-90-5
Nd	1.7	7440-00-8
Y	0.8	7440-65-5
Pr	0.3	7440-10-0
Fe	0.1	7439-89-6
Mg	0.1	7439-95-4

RN 681799-94-0 HCA

CN Nickel alloy, base, Ni 56,La 23,Co 7,Ce 5.3,Mn 3.9,Al 2,Nd 1.7,Y  
0.8,Pr 0.3,Mg 0.2,Fe 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	56	7440-02-0
La	23	7439-91-0
Co	7	7440-48-4
Ce	5.3	7440-45-1
Mn	3.9	7439-96-5
Al	2	7429-90-5
Nd	1.7	7440-00-8
Y	0.8	7440-65-5
Pr	0.3	7440-10-0
Mg	0.2	7439-95-4
Fe	0.1	7439-89-6

RN 681799-95-1 HCA

CN Nickel alloy, base, Ni 56,La 23,Co 7,Ce 4.3,Mn 3.9,Al 2.1,Nd 1.7,Y  
0.8,Mg 0.4,Pr 0.3,Fe 0.1 (9CI) (CA INDEX NAME)

Component	Component	Component
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	Percent	Registry Number
=====+=====+=====		
Ni	56	7440-02-0
La	23	7439-91-0
Co	7	7440-48-4
Ce	4.3	7440-45-1
Mn	3.9	7439-96-5
Al	2.1	7429-90-5
Nd	1.7	7440-00-8
Y	0.8	7440-65-5
Mg	0.4	7439-95-4
Pr	0.3	7440-10-0
Fe	0.1	7439-89-6

RN 681799-96-2 HCA

CN Nickel alloy, base, Ni 55,La 23,Co 6.9,Ce 5.2,Mn 3.9,Al 2,Nd 1.7,Yb 1.6,Pr 0.3,Mg 0.2,Fe 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Ni	55	7440-02-0
La	23	7439-91-0
Co	6.9	7440-48-4
Ce	5.2	7440-45-1
Mn	3.9	7439-96-5
Al	2	7429-90-5
Nd	1.7	7440-00-8
Yb	1.6	7440-64-4
Pr	0.3	7440-10-0
Mg	0.2	7439-95-4
Fe	0.1	7439-89-6

IC ICM C22C019-00

ICS B22F001-00; H01M004-24; H01M004-38; H01M010-30

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **hydrogen absorbing** alloy cryst structure compn  
nickel **battery** anode; nickel cathode compn hydrogen  
**battery**

IT **Battery** cathodes  
(additives in nickel cathodes for hydrogen **batteries**)

IT **Battery** anodes  
(compsn. of powd. **hydrogen absorbing** alloy  
with CaCu5 structure for nickel **battery** anodes)

IT **12054-48-7, Nickel hydroxide [Ni  
(OH)2]**  
(additives in nickel cathodes for hydrogen **batteries**)

IT 1314-36-9, Yttria, uses 1314-37-0, Ytterbium oxide (Yb2O3)

12032-20-1, Lutetium oxide ( $\text{Lu}_2\text{O}_3$ ) 12036-44-1, Thulium oxide ( $\text{Tm}_2\text{O}_3$ ) 12061-16-4, Erbium oxide ( $\text{Er}_2\text{O}_3$ )  
(additives in nickel cathodes for hydrogen **batteries**)

IT **1333-74-0**, Hydrogen, uses

(compsn. of powd. **hydrogen absorbing** alloy  
with  $\text{CaCu}_5$  structure for nickel **battery** anodes)

IT 681799-70-2 681799-71-3 681799-72-4 681799-73-5 681799-74-6  
681799-75-7 681799-76-8 681799-77-9 681799-78-0 681799-79-1  
681799-80-4 681799-81-5 681799-82-6 681799-83-7 681799-84-8  
681799-85-9 681799-86-0 681799-87-1 681799-88-2 681799-89-3  
681799-90-6 681799-91-7 681799-92-8 **681799-93-9**

**681799-94-0 681799-95-1 681799-96-2**

(compsn. of powd. **hydrogen absorbing** alloy  
with  $\text{CaCu}_5$  structure for nickel **battery** anodes)

L45 ANSWER 19 OF 42 HCA COPYRIGHT 2005 ACS on STN

140:360176 Structural and Electrochemical Properties of the

$\text{La}_{0.7}\text{Mg}_{0.3}\text{Ni}_{2.975-x}\text{Co}_{0.525}\text{Mn}_x$  **Hydrogen Storage**

Electrode Alloys. Pan, Hongge; Liu, Yongfeng; Gao, Mingxia; Zhu, Yunfeng; Lei, Yongquan; Wang, Qidong (Department of Materials Science and Engineering, Zhejiang University, Hangzhou, 310027, Peop. Rep. China). Journal of the Electrochemical Society, 151(3), A374-A380 (English) 2004. CODEN: JESOAN. ISSN: 0013-4651. Publisher: Electrochemical Society.

AB The effect of partial substitution of Mn for Ni on the structural and electrochem. properties of the  $\text{La}_{0.7}\text{Mg}_{0.3}\text{Ni}_{2.975-x}\text{Co}_{0.525}\text{Mn}_x$  ( $x = 0.0, 0.1, 0.2, 0.3, 0.4, 0.5$ ) **hydrogen storage** alloys was studied systematically. The results of x-ray powder diffraction and Rietveld analyses showed that all alloys consisted of the  $(\text{La}, \text{Mg})\text{Ni}_3$  phase and the  $\text{LaNi}_5$  phase, and the content of the  $(\text{La}, \text{Mg})\text{Ni}_3$  phase 1st remained unchanged (.apprx.77%) and then decreased, but the content of the  $\text{LaNi}_5$  phase increased progressively with increasing  $x$ . Meanwhile, the lattice parameters and cell vols. of the  $(\text{La}, \text{Mg})\text{Ni}_3$  phase and the  $\text{LaNi}_5$  phase all increased with increasing Mn content. The pressure compn. isotherms showed that the **hydrogen storage** capacity 1st remained almost unchanged and then decreased with increasing  $x$  from 0.0 to 0.5, and the equil. pressure decreased from 0.51 atm to 0.06 atm. The electrochem. measurements indicated that the max. discharge capacity 1st remains unchanged (.apprx.400 mAh/g) with increasing  $x$  from 0.0 to 0.2 and then decreased when  $x$  increased further. Also, the high rate discharge-ability, the exchange c.d.  $I_0$ , the limiting c.d.  $I_L$ , and the hydrogen diffusion coeff.  $D$  of the alloy electrodes all increased 1st and then decreased with increasing  $x$ , which indicates that the kinetics of hydriding/dehydriding of the  $\text{La}_{0.7}\text{Mg}_{0.3}\text{Ni}_{2.975-x}\text{Co}_{0.525}\text{Mn}_x$  ( $x = 0.0, 0.1, 0.2, 0.3, 0.4, 0.5$ ) **hydrogen storage** alloys increased 1st up to  $x = 0.1$  and then decreased with further

increasing x.

IT **12054-48-7, Nickel hydroxide (Ni(OH)2)**  
 (composite electrode with NiHO<sub>2</sub>; structural and electrochem. properties of La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Co<sub>0.525</sub>Mnx **hydrogen storage** electrode alloys)  
 RN 12054-48-7 HCA  
 CN Nickel hydroxide (Ni(OH)<sub>2</sub>) (8CI, 9CI) (CA INDEX NAME)

HO—Ni—OH

IT **1333-74-0, Hydrogen, reactions**  
 (**storage** and diffusion through anodes; structural and electrochem. properties of La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Co<sub>0.525</sub>Mnx **hydrogen storage** electrode alloys)  
 RN 1333-74-0 HCA  
 CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H—H

IT **610796-26-4P 671235-23-7P 682809-10-5P 682809-11-6P 682809-12-7P 682809-13-8P**  
 (structural and electrochem. properties of La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Co<sub>0.525</sub>Mnx **hydrogen storage** electrode alloys)  
 RN 610796-26-4 HCA  
 CN Nickel alloy, base, Ni 56,La 31,Co 10,Mg 2.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	56	7440-02-0
La	31	7439-91-0
Co	10	7440-48-4
Mg	2.4	7439-95-4

RN 671235-23-7 HCA  
 CN Nickel alloy, base, Ni 54,La 31,Co 10,Mg 2.4,Mn 1.8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	54	7440-02-0
La	31	7439-91-0
Co	10	7440-48-4



Mg	2.4	7439-95-4
Mn	1.8	7439-96-5

RN 682809-10-5 HCA

CN Nickel alloy, base, Ni 55,La 33,Co 10,Mg 2.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	55	7440-02-0
La	33	7439-91-0
Co	10	7440-48-4
Mg	2.4	7439-95-4

RN 682809-11-6 HCA

CN Nickel alloy, base, Ni 51,La 31,Co 10,Mn 5.3,Mg 2.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	51	7440-02-0
La	31	7439-91-0
Co	10	7440-48-4
Mn	5.3	7439-96-5
Mg	2.4	7439-95-4

RN 682809-12-7 HCA

CN Nickel alloy, base, Ni 49,La 32,Co 10,Mn 7.1,Mg 2.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	49	7440-02-0
La	32	7439-91-0
Co	10	7440-48-4
Mn	7.1	7439-96-5
Mg	2.4	7439-95-4

RN 682809-13-8 HCA

CN Nickel alloy, base, Ni 47,La 32,Co 10,Mn 8.9,Mg 2.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	47	7440-02-0

La	32	7439-91-0
Co	10	7440-48-4
Mn	8.9	7439-96-5
Mg	2.4	7439-95-4

- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 72, 75, 76
- ST electrochem cobalt lanthanum magnesium nickel **hydrogen storage** alloy; secondary **battery** anode  
polarization impedance hydriding lattice parameter capacitance
- IT Electric impedance  
(of assembled **batteries**; structural and electrochem. properties of La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Co<sub>0.525</sub>Mnx **hydrogen storage** electrode alloys)
- IT Electric capacitance  
(of nickel alloy electrodes; structural and electrochem. properties of La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Co<sub>0.525</sub>Mnx **hydrogen storage** electrode alloys)
- IT Anodic polarization  
**Battery** anodes  
Hydriding kinetics  
Secondary **batteries**  
(structural and electrochem. properties of La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Co<sub>0.525</sub>Mnx **hydrogen storage** electrode alloys)
- IT 55070-72-9, **Nickel hydroxide** oxide  
(composite electrode with **Ni(OH)<sub>2</sub>**;  
structural and electrochem. properties of La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Co<sub>0.525</sub>Mnx **hydrogen storage** electrode alloys)
- IT 12054-48-7, **Nickel hydroxide (Ni(OH)<sub>2</sub>)**  
(composite electrode with NiH<sub>2</sub>O<sub>2</sub>; structural and electrochem. properties of La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Co<sub>0.525</sub>Mnx **hydrogen storage** electrode alloys)
- IT 33637-76-2, Carbonyl nickel  
(composite with the nickel alloys; structural and electrochem. properties of La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Co<sub>0.525</sub>Mnx **hydrogen storage** electrode alloys)
- IT 1313-13-9, Manganese oxide, properties 12142-63-1 12196-72-4 682809-14-9  
(phase in nickel alloys; structural and electrochem. properties of La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Co<sub>0.525</sub>Mnx **hydrogen storage** electrode alloys)
- IT 1333-74-0, **Hydrogen**, reactions  
(**storage** and diffusion through anodes; structural and electrochem. properties of La<sub>0.7</sub>Mg<sub>0.3</sub>Ni<sub>2.975-x</sub>Co<sub>0.525</sub>Mnx **hydrogen storage** electrode alloys)

- IT 1310-58-3, Potassium hydroxide, uses  
(structural and electrochem. properties of  $\text{La}_{0.7}\text{Mg}_{0.3}\text{Ni}_{2.975-x}\text{Co}_{0.525}\text{Mn}_x$  **hydrogen storage** electrode alloys)
- IT **610796-26-4P 671235-23-7P 682809-10-5P**  
**682809-11-6P 682809-12-7P 682809-13-8P**  
(structural and electrochem. properties of  $\text{La}_{0.7}\text{Mg}_{0.3}\text{Ni}_{2.975-x}\text{Co}_{0.525}\text{Mn}_x$  **hydrogen storage** electrode alloys)
- IT 7439-91-0, Lanthanum, reactions 7439-95-4, Magnesium, reactions  
7439-96-5, Manganese, reactions 7440-02-0, Nickel, reactions  
7440-48-4, Cobalt, reactions  
(structural and electrochem. properties of  $\text{La}_{0.7}\text{Mg}_{0.3}\text{Ni}_{2.975-x}\text{Co}_{0.525}\text{Mn}_x$  **hydrogen storage** electrode alloys)

L45 ANSWER 20 OF 42 HCA COPYRIGHT 2005 ACS on STN

140:342164 Secondary nickel/hydrogen **batteries**. Kihara,  
Masaru (Sanyo Electric Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP  
2004127549 A2 20040422, 10 pp. (Japanese). CODEN: JKXXAF.  
APPLICATION: JP 2002-286106 20020930.

AB The **batteries** comprise **Ni hydroxide**  
cathodes and anodes contg. **hydrogen-absorbing**  
alloys expressed by  $\text{Ln}_{1-x}\text{Mg}_x(\text{Ni}_{1-y}\text{Ti}_y)_z$  ( $\text{Ln} = \text{La, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Ca, Sr, Sc, Y, Ti, Zr, Hf}$ ;  $T = \text{V, Nb, Ta, Cr, Mo, Fe, Co, Al, Ga, Zn, Sn, In, Cu, Si, P, B}$ ;  $0 < x < 1$ ;  $y = 0-0.5$ ;  $z = 2.5-4.5$ ). The **batteries** show excellent  
high-rate charge-discharge performance and long service life.

IT **1333-74-0, Hydrogen**, uses  
(alloys **absorbing**, anodes; secondary Ni/H  
**batteries** using anodes contg. **hydrogen-**  
**absorbing** alloys)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

IT **12054-48-7P, Nickel hydroxide** [  
**Ni(OH)<sub>2</sub>**]  
(cathode component; secondary Ni/H **batteries** using  
anodes contg. **hydrogen-absorbing** alloys)

RN 12054-48-7 HCA

CN Nickel hydroxide ( $\text{Ni(OH)}_2$ ) (8CI, 9CI) (CA INDEX NAME)

HO-Ni-OH

IT 681120-85-4P  
 (hydrogen-absorbing, anodes; secondary Ni/H  
 batteries using anodes contg. hydrogen-  
 absorbing alloys)  
 RN 681120-85-4 HCA  
 CN Nickel alloy, base, Ni 61,Nd 13,Pr 12,La 8.1,Mg 2.4,Co 2,Al 1.8  
 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0
Nd	13	7440-00-8
Pr	12	7440-10-0
La	8.1	7439-91-0
Mg	2.4	7439-95-4
Co	2	7440-48-4
Al	1.8	7429-90-5

IC ICM H01M004-38  
 ICS C22C019-00; H01M004-24; H01M004-32; H01M004-52; H01M010-30  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 56  
 ST battery anode hydrogen absorbing  
 alloy; misch metal alloy absorbing hydrogen  
 battery anode; nickel hydrogen battery anode alloy  
 IT Rare earth alloys  
 Transition metal alloys  
 (hydrogen-absorbing, anodes; secondary Ni/H  
 batteries using anodes contg. hydrogen-  
 absorbing alloys)  
 IT Battery cathodes  
 (nickel hydroxide; secondary Ni/H  
 batteries using anodes contg. hydrogen-  
 absorbing alloys)  
 IT Battery anodes  
 Secondary batteries  
 (secondary Ni/H batteries using anodes contg.  
 hydrogen-absorbing alloys)  
 IT 1333-74-0, Hydrogen, uses  
 (alloys absorbing, anodes; secondary Ni/H  
 batteries using anodes contg. hydrogen-  
 absorbing alloys)  
 IT 12054-48-7P, Nickel hydroxide [  
 Ni(OH)2] 12125-56-3P, Nickel  
 hydroxide [Ni(OH)3] 12672-51-4P, Cobalt hydroxide  
 (cathode component; secondary Ni/H batteries using  
 anodes contg. hydrogen-absorbing alloys)

- IT 7440-23-5, Sodium, uses  
(cobalt hydroxide contg., in cathodes; secondary Ni/H  
**batteries** using anodes contg. **hydrogen-  
absorbing** alloys)
- IT 7439-89-6, Iron, uses 7439-98-7, Molybdenum, uses 7440-03-1,  
Niobium, uses 7440-21-3, Silicon, uses 7440-25-7, Tantalum, uses  
7440-31-5, Tin, uses 7440-42-8, Boron, uses 7440-47-3, Chromium,  
uses 7440-50-8, Copper, uses 7440-55-3, Gallium, uses  
7440-62-2, Vanadium, uses 7440-66-6, Zinc, uses 7440-74-6,  
Indium, uses 7723-14-0, Phosphorus, uses  
(**hydrogen-absorbing** alloys contg., anodes;  
secondary Ni/H **batteries** using anodes contg.  
**hydrogen-absorbing** alloys)
- IT 681120-84-3P **681120-85-4P**  
(**hydrogen-absorbing**, anodes; secondary Ni/H  
**batteries** using anodes contg. **hydrogen-  
absorbing** alloys)
- IT 7733-02-0, Zinc sulfate 7786-81-4, Nickel sulfate 10124-43-3,  
Cobalt sulfate  
(in prepn. of cathodes; secondary Ni/H **batteries** using  
anodes contg. **hydrogen-absorbing** alloys)
- IT 7681-52-9, Sodium hypochlorite  
(oxidizer, in prepn. of cathodes; secondary Ni/H  
**batteries** using anodes contg. **hydrogen-  
absorbing** alloys)
- L45 ANSWER 21 OF 42 HCA COPYRIGHT 2005 ACS on STN  
140:131022 Development of Mg-Added MmNi5-Based Alloys with Low Co  
Content for High Power Applications. Yang, H. B.; Sakai, T.; Iwaki,  
T.; Tanase, S.; Fukunaga, H. (National Institute of Advanced  
Industrial Science and Technology, Research Team of Secondary  
Battery System, Ikeda, Osaka, 563-8577, Japan). Journal of the  
Electrochemical Society, 150(12), A1684-A1688 (English) 2003.  
CODEN: JESOAN. ISSN: 0013-4651. Publisher: Electrochemical  
Society.
- AB Mg addn. effects on the structure, surface morphol.,  
pressure-concn.-temp. properties, cyclic behavior, and high rate  
capability of low-Co contg. mischmetal (Mm)-Ni-Co-Mn-Al alloys were  
studied. 4 Atom % Mg addn. significantly improved the cycle life of  
this AB5-type alloy with low Co content. However, Mg addn. caused a  
small decrease in the high rate capability. Pressure compn.  
isotherm results showed that Mg addn. increased plateau pressure and  
a loss of capacity. SEM and electron probe microanal. results  
showed that Mg addn. resulted in some segregation of an Mg-Mn-Al  
phase. The decrease in the high rate capability could be attributed  
to the formation of the Mg-Mn-Al phase. Further the decrease of  
Mn/Al ratio and alkali treatment could improve the high rate  
capability of the Mg-added MmNi5-based alloys.

IT 651046-14-9P 651046-15-0P 651046-16-1P  
651046-17-2P 651046-18-3P

(development of Mg-added MmNi5-based alloys with low Co content  
for high power secondary **battery** applications)

RN 651046-14-9 HCA

CN Nickel alloy, base, Ni 55,La 28,Mn 4.9,Co 4,Ce 3.1,Pr 1.9,Al 1.8,Nd  
1.3,Mg 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	55	7440-02-0
La	28	7439-91-0
Mn	4.9	7439-96-5
Co	4	7440-48-4
Ce	3.1	7440-45-1
Pr	1.9	7440-10-0
Al	1.8	7429-90-5
Nd	1.3	7440-00-8
Mg	0.1	7439-95-4

RN 651046-15-0 HCA

CN Nickel alloy, base, Ni 56,La 27,Mn 5,Co 4,Ce 3,Al 1.8,Pr 1.8,Nd  
1.3,Mg 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	56	7440-02-0
La	27	7439-91-0
Mn	5	7439-96-5
Co	4	7440-48-4
Ce	3	7440-45-1
Al	1.8	7429-90-5
Pr	1.8	7440-10-0
Nd	1.3	7440-00-8
Mg	0.2	7439-95-4

RN 651046-16-1 HCA

CN Nickel alloy, base, Ni 57,La 28,Co 4.1,Al 3.7,Ce 3.1,Pr 1.9,Mn  
1.3,Nd 1.3,Mg 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	57	7440-02-0
La	28	7439-91-0
Co	4.1	7440-48-4

Al	3.7	7429-90-5
Ce	3.1	7440-45-1
Pr	1.9	7440-10-0
Mn	1.3	7439-96-5
Nd	1.3	7440-00-8
Mg	0.2	7439-95-4

RN 651046-17-2 HCA

CN Nickel alloy, base, Ni 56,La 27,Co 4,Al 3.1,Ce 3.1,Mn 2.5,Pr 1.9,Nd 1.3,Mg 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Ni	56	7440-02-0
La	27	7439-91-0
Co	4	7440-48-4
Al	3.1	7429-90-5
Ce	3.1	7440-45-1
Mn	2.5	7439-96-5
Pr	1.9	7440-10-0
Nd	1.3	7440-00-8
Mg	0.2	7439-95-4

RN 651046-18-3 HCA

CN Nickel alloy, base, Ni 56,La 27,Co 4,Mn 3.7,Ce 3.1,Al 2.5,Pr 1.8,Nd 1.3,Mg 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Ni	56	7440-02-0
La	27	7439-91-0
Co	4	7440-48-4
Mn	3.7	7439-96-5
Ce	3.1	7440-45-1
Al	2.5	7429-90-5
Pr	1.8	7440-10-0
Nd	1.3	7440-00-8
Mg	0.2	7439-95-4

IT **12054-48-7, Nickel hydroxide (Ni(OH)2)**

(electrode plate with NiOOH; development of Mg-added MmNi5-based alloys with low Co content for high power secondary **battery** applications)

RN 12054-48-7 HCA

CN Nickel hydroxide (Ni(OH)2) (8CI, 9CI) (CA INDEX NAME)

HO-Ni-OH

IT **651046-20-7**

(light colored phase in electrode alloy; development of Mg-added MmNi5-based alloys with low Co content for high power secondary **battery** applications)

RN 651046-20-7 HCA

CN Nickel alloy, base, Ni 52,La 30,Mn 6,Co 3.8,Ce 3.4,Pr 2,Al 1.5,Nd 1.4,Mg 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	52	7440-02-0
La	30	7439-91-0
Mn	6	7439-96-5
Co	3.8	7440-48-4
Ce	3.4	7440-45-1
Pr	2	7440-10-0
Al	1.5	7429-90-5
Nd	1.4	7440-00-8
Mg	0.2	7439-95-4

IT **651046-21-8**

(medium colored phase in electrode alloy; development of Mg-added MmNi5-based alloys with low Co content for high power secondary **battery** applications)

RN 651046-21-8 HCA

CN Nickel alloy, base, Ni 55,La 22,Mn 8.4,Co 4.5,Mg 4.2,Ce 2.4,Pr 1.5,Nd 1,Al 0.8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	55	7440-02-0
La	22	7439-91-0
Mn	8.4	7439-96-5
Co	4.5	7440-48-4
Mg	4.2	7439-95-4
Ce	2.4	7440-45-1
Pr	1.5	7440-10-0
Nd	1	7440-00-8
Al	0.8	7429-90-5

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 56, 72, 76



- ST nickel magnesium cobalt alloy secondary automotive **battery**  
neg electrode; elec power misch metal manganese aluminum  
**hydrogen storage** electrode
- IT Secondary **batteries**  
(automotive; development of Mg-added MmNi5-based alloys with low  
Co content for high power secondary **battery**  
applications)
- IT **Battery** anodes  
Hydriding  
(development of Mg-added MmNi5-based alloys with low Co content  
for high power secondary **battery** applications)
- IT Bases, uses  
(development of Mg-added MmNi5-based alloys with low Co content  
for high power secondary **battery** applications)
- IT Electric energy  
(discharge capacity vs. discharge rate for alloy electrodes;  
development of Mg-added MmNi5-based alloys with low Co content  
for high power secondary **battery** applications)
- IT Alloys, uses  
(for **hydrogen storage**; development of  
Mg-added MmNi5-based alloys with low Co content for high power  
secondary **battery** applications)
- IT 9002-89-5, Polyvinyl alcohol  
(composite electrode with Inco 255; development of Mg-added  
MmNi5-based alloys with low Co content for high power secondary  
**battery** applications)
- IT 131158-33-3, Inco 255  
(composite electrode with PVA; development of Mg-added  
MmNi5-based alloys with low Co content for high power secondary  
**battery** applications)
- IT 651046-22-9  
(dark colored phase in electrode alloy, also a composite phase;  
development of Mg-added MmNi5-based alloys with low Co content  
for high power secondary **battery** applications)
- IT 1310-58-3, Potassium hydroxide (KOH), uses 1310-65-2, Lithium  
hydroxide (LiOH)  
(development of Mg-added MmNi5-based alloys with low Co content  
for high power secondary **battery** applications)
- IT 651046-11-6P 651046-12-7P **651046-14-9P**  
**651046-15-0P 651046-16-1P 651046-17-2P**  
**651046-18-3P**  
(development of Mg-added MmNi5-based alloys with low Co content  
for high power secondary **battery** applications)
- IT 651046-19-4  
(development of Mg-added MmNi5-based alloys with low Co content  
for high power secondary **battery** applications)
- IT 7440-02-0, Nickel, uses  
(development of Mg-added MmNi5-based alloys with low Co content

- for high power secondary **battery** applications)
- IT 12026-04-9, Nickel oxide hydroxide (NiOOH)  
(electrode plate with **Ni(OH)2**;  
development of Mg-added MmNi5-based alloys with low Co content  
for high power secondary **battery** applications)
- IT 12054-48-7, Nickel hydroxide (Ni  
(OH)2)  
(electrode plate with NiOOH; development of Mg-added MmNi5-based  
alloys with low Co content for high power secondary  
**battery** applications)
- IT 651046-20-7  
(light colored phase in electrode alloy; development of Mg-added  
MmNi5-based alloys with low Co content for high power secondary  
**battery** applications)
- IT 651046-21-8  
(medium colored phase in electrode alloy; development of Mg-added  
MmNi5-based alloys with low Co content for high power secondary  
**battery** applications)
- IT 9003-07-0D, Polypropylene, sulfonated  
(nonwoven, separator; development of Mg-added MmNi5-based alloys  
with low Co content for high power secondary **battery**  
applications)

L45 ANSWER 22 OF 42 HCA COPYRIGHT 2005 ACS on STN

137:22356 **Hydrogen absorbing** alloy, secondary  
**battery**, hybrid car, and electric automobile. Sakai, Isao;  
Inaba, Takamichi; Yoshida, Hideki; Yamamoto, Masaaki; Irie,  
Shuichiro; Suzuki, Shuji; Takeno, Kazuta (Toshiba Corp., Japan;  
Toshiba Battery Co., Ltd.). Jpn. Kokai Tokkyo Koho JP 2002164045 A2  
20020607, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
2000-359764 20001127.

AB The alloy is (R1-a-bLaaCeb)1-cMgcNiz-x-y-.alpha.-  
.beta.MnxAlyCo.alpha.M.beta., where R = Ca and/or Y contg. rare  
earth element other than La and Ce; M = Fe, Ga, Zn, Sn, Cu, Si, B,  
Ti, Zr, Nb, W, Mo, V, Cr, Ta, Li, and/or P;  $0 < a \leq 0.45$ ,  $b \leq 0.2$ ,  $0.1 \leq c = [(-0.025/a) + \gamma] \leq 0.24$ ,  $x \leq 0.1$ ,  $0.02 \leq y \leq 0.2$ ,  $\alpha \leq 0.5$ ,  $\beta \leq 0.1$ ,  $3.2 \leq z \leq 3.8$ , and  $0.2 \leq \gamma \leq 0.29$ . Preferably, the alloy has a hexagonal, other than  
CaCu5 type, cryst. structure.

IT 1333-74-0, Hydrogen, uses  
(compns. and cryst. structure of **hydrogen**  
**absorbing** rare earth magnesium nickel alloys for  
**battery** anodes for vehicles)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

IT 433968-24-2 433968-26-4 433968-27-5  
433968-28-6 433968-30-0 433968-31-1  
433968-33-3 433968-34-4 433968-35-5  
433968-36-6 433968-38-8 433968-40-2  
433968-41-3 433968-44-6

(comps. and cryst. structure of **hydrogen**  
**absorbing** rare earth magnesium nickel alloys for  
**battery** anodes for vehicles)

RN 433968-24-2 HCA

CN Nickel alloy, base, Ni 61,Nd 20,La 9.1,Pr 6.3,Ce 1.5,Mg 1.1,Al 0.8  
(9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0
Nd	20	7440-00-8
La	9.1	7439-91-0
Pr	6.3	7440-10-0
Ce	1.5	7440-45-1
Mg	1.1	7439-95-4
Al	0.8	7429-90-5

RN 433968-26-4 HCA

CN Nickel alloy, base, Ni 61,Nd 14,La 11,Pr 11,Ce 1.5,Mg 1.4,Al 0.7  
(9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0
Nd	14	7440-00-8
La	11	7439-91-0
Pr	11	7440-10-0
Ce	1.5	7440-45-1
Mg	1.4	7439-95-4
Al	0.7	7429-90-5

RN 433968-27-5 HCA

CN Nickel alloy, base, Ni 61,Nd 18,La 13,Pr 5.5,Mg 1.3,Al 0.8,Ce 0.4  
(9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
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```

=====+=====+=====
Ni          61          7440-02-0
Nd          18          7440-00-8
La          13          7439-91-0
Pr          5.5        7440-10-0
Mg          1.3        7439-95-4
Al          0.8        7429-90-5
Ce          0.4        7440-45-1

```

RN 433968-28-6 HCA

CN Nickel alloy, base, Ni 60,Nd 19,Pr 11,La 7.4,Mg 1.1,Al 0.9,Ce 0.4  
(9CI) (CA INDEX NAME)

```

Component    Component    Component
              Percent      Registry Number
=====+=====+=====
Ni           60           7440-02-0
Nd           19           7440-00-8
Pr           11           7440-10-0
La           7.4          7439-91-0
Mg           1.1          7439-95-4
Al           0.9          7429-90-5
Ce           0.4          7440-45-1

```

RN 433968-30-0 HCA

CN Nickel alloy, base, Ni 61,Nd 21,La 9.1,Pr 5.5,Mg 1.2,Ce 1.1,Al 0.8  
(9CI) (CA INDEX NAME)

```

Component    Component    Component
              Percent      Registry Number
=====+=====+=====
Ni           61           7440-02-0
Nd           21           7440-00-8
La           9.1          7439-91-0
Pr           5.5          7440-10-0
Mg           1.2          7439-95-4
Ce           1.1          7440-45-1
Al           0.8          7429-90-5

```

RN 433968-31-1 HCA

CN Nickel alloy, base, Ni 61,Nd 18,La 10,Pr 5.6,Ce 3.7,Mg 1.2,Al 0.7  
(9CI) (CA INDEX NAME)

```

Component    Component    Component
              Percent      Registry Number
=====+=====+=====
Ni           61           7440-02-0
Nd           18           7440-00-8

```

La	10	7439-91-0
Pr	5.6	7440-10-0
Ce	3.7	7440-45-1
Mg	1.2	7439-95-4
Al	0.7	7429-90-5

RN 433968-33-3 HCA

CN Nickel alloy, base, Ni 61,Nd 17,La 12,Pr 5.5,Ce 2.2,Mg 1.3,Al 0.8,Co 0.2,Mn 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0
Nd	17	7440-00-8
La	12	7439-91-0
Pr	5.5	7440-10-0
Ce	2.2	7440-45-1
Mg	1.3	7439-95-4
Al	0.8	7429-90-5
Co	0.2	7440-48-4
Mn	0.2	7439-96-5

RN 433968-34-4 HCA

CN Nickel alloy, base, Ni 60,Nd 19,La 9.9,Pr 7.1,Ce 1.5,Mg 1,Al 0.9,Cu 0.4,Cr 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	60	7440-02-0
Nd	19	7440-00-8
La	9.9	7439-91-0
Pr	7.1	7440-10-0
Ce	1.5	7440-45-1
Mg	1	7439-95-4
Al	0.9	7429-90-5
Cu	0.4	7440-50-8
Cr	0.2	7440-47-3

RN 433968-35-5 HCA

CN Nickel alloy, base, Ni 61,Pr 14,Nd 12,La 9,Ce 1.4,Mg 1.3,Al 0.8,Mo 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0

Pr	14	7440-10-0
Nd	12	7440-00-8
La	9	7439-91-0
Ce	1.4	7440-45-1
Mg	1.3	7439-95-4
Al	0.8	7429-90-5
Mo	0.1	7439-98-7

RN 433968-36-6 HCA

CN Nickel alloy, base, Ni 61,La 15,Nd 13,Pr 6.5,Ce 2.5,Mg 1.3,Al 0.8,Ga 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Ni	61	7440-02-0
La	15	7439-91-0
Nd	13	7440-00-8
Pr	6.5	7440-10-0
Ce	2.5	7440-45-1
Mg	1.3	7439-95-4
Al	0.8	7429-90-5
Ga	0.1	7440-55-3

RN 433968-38-8 HCA

CN Nickel alloy, base, Ni 61,Nd 19,La 11,Pr 3,Y 2.4,Ce 1.5,Mg 1.1,Al 0.8,Zn 0.2,Nb 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Ni	61	7440-02-0
Nd	19	7440-00-8
La	11	7439-91-0
Pr	3	7440-10-0
Y	2.4	7440-65-5
Ce	1.5	7440-45-1
Mg	1.1	7439-95-4
Al	0.8	7429-90-5
Zn	0.2	7440-66-6
Nb	0.1	7440-03-1

RN 433968-40-2 HCA

CN Nickel alloy, base, Ni 61,La 14,Nd 14,Pr 5.5,Ce 1.4,Mg 1.3,Sm 1.2,Al 0.8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
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```

=====+=====+=====
Ni          61          7440-02-0
La          14          7439-91-0
Nd          14          7440-00-8
Pr          5.5         7440-10-0
Ce          1.4         7440-45-1
Mg          1.3         7439-95-4
Sm          1.2         7440-19-9
Al          0.8         7429-90-5

```

RN 433968-41-3 HCA

CN Nickel alloy, base, Ni 61,Nd 15,La 14,Pr 4.3,Gd 2,Mg 1.4,Al 0.8,Ce  
0.7 (9CI) (CA INDEX NAME)

```

Component      Component      Component
                Percent      Registry Number
=====+=====+=====
Ni             61             7440-02-0
Nd             15             7440-00-8
La             14             7439-91-0
Pr             4.3            7440-10-0
Gd             2              7440-54-2
Mg             1.4            7439-95-4
Al             0.8            7429-90-5
Ce             0.7            7440-45-1

```

RN 433968-44-6 HCA

CN Nickel alloy, base, Ni 61,La 15,Nd 12,Pr 5.4,Er 3,Mg 1.4,Ce 1.1,Al  
0.8,Mn 0.5 (9CI) (CA INDEX NAME)

```

Component      Component      Component
                Percent      Registry Number
=====+=====+=====
Ni             61             7440-02-0
La             15             7439-91-0
Nd             12             7440-00-8
Pr             5.4            7440-10-0
Er             3              7440-52-0
Mg             1.4            7439-95-4
Ce             1.1            7440-45-1
Al             0.8            7429-90-5
Mn             0.5            7439-96-5

```

IC ICM H01M004-24

ICS H01M004-24; B60K006-02; B60L011-18; C22C019-00; H01M010-30

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST hybrid car **battery hydrogen absorbing**  
alloy; elec automobile **battery hydrogen**

- absorbing** alloy; rare earth magnesium nickel  
**hydrogen absorbing** alloy
- IT Electric vehicles  
 (automobiles; compns. and cryst. structure of **hydrogen absorbing** rare earth magnesium nickel alloys for **battery** anodes for elec. automobiles)
- IT Automobiles  
 (compns. and cryst. structure of **hydrogen absorbing** rare earth magnesium nickel alloys for **battery** anodes for hybrid cars)
- IT **Battery** anodes  
 (compns. and cryst. structure of **hydrogen absorbing** rare earth magnesium nickel alloys for **battery** anodes for vehicles)
- IT Automobiles  
 (elec.; compns. and cryst. structure of **hydrogen absorbing** rare earth magnesium nickel alloys for **battery** anodes for elec. automobiles)
- IT 1333-74-0, Hydrogen, uses  
 (compns. and cryst. structure of **hydrogen absorbing** rare earth magnesium nickel alloys for **battery** anodes for vehicles)
- IT 433968-24-2 433968-25-3 433968-26-4  
 433968-27-5 433968-28-6 433968-29-7  
 433968-30-0 433968-31-1 433968-32-2  
 433968-33-3 433968-34-4 433968-35-5  
 433968-36-6 433968-38-8 433968-39-9  
 433968-40-2 433968-41-3 433968-42-4  
 433968-43-5 433968-44-6  
 (compns. and cryst. structure of **hydrogen absorbing** rare earth magnesium nickel alloys for **battery** anodes for vehicles)
- L45 ANSWER 23 OF 42 HCA COPYRIGHT 2005 ACS on STN  
 136:220321 Hydrogen occlusion alloy and its use in alkaline secondary **battery**, hybrid cars or electric cars. Yoshida, Hideki; Yamamoto, Masaaki; Sakai, Isao; Inaba, Takamichi; Takabayashi, Junichi; Irie, Shuichiro; Suzuki, Shuji; Takeno, Kazuta (Toshiba Corp., Japan; Toshiba Battery Co., Ltd.). Jpn. Kokai Tokkyo Koho JP 2002069554 A2 20020308, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-270401 20000906.
- AB Hydrogen-occlusion alloy is preferably rare earth metal-Ni alloy having a general formula of  $R_{1-a}Mg_aNi_bCo_cM_d$ , in which R is .gtoreq.2 rare earth metals such as La, Ce, Pr, Nd, and Y; M is .gtoreq.1 elements of Mn, Fe, V, Cr, Nb, Al, Ga, Zn, Sn, Cu, Si, P and B; a = 0.15-0.35, c = 0-1.5, d = 0-0.2, (b+c+d) = 2.9-3.5, and a Mg concn. ratio of central section to outer surface section of (0.07-0.7):1 in its microstructure. The alk. secondary **battery** comprises



a neg. electrode made from hydrogen-occlusion alloy powder, an alk. electrolyte soln., and a separator arranged between pos. electrode and neg. electrode.

IT **402739-84-8 402739-85-9**

(hydrogen occlusion alloy and its use in alk. secondary **battery**, hybrid cars or elec. cars)

RN 402739-84-8 HCA

CN Nickel alloy, base, Ni 54,La 31,Co 5.8,Ce 3.3,Mg 1.8,Mn 1.8,Pr 0.7,Nd 0.4,Sm 0.4,Al 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	54	7440-02-0
La	31	7439-91-0
Co	5.8	7440-48-4
Ce	3.3	7440-45-1
Mg	1.8	7439-95-4
Mn	1.8	7439-96-5
Pr	0.7	7440-10-0
Nd	0.4	7440-00-8
Sm	0.4	7440-19-9
Al	0.3	7429-90-5

RN 402739-85-9 HCA

CN Nickel alloy, base, Ni 58,La 20,Sm 13,Ce 3.3,Mg 1.9,Mn 0.9,Nd 0.8,Al 0.7,Pr 0.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	58	7440-02-0
La	20	7439-91-0
Sm	13	7440-19-9
Ce	3.3	7440-45-1
Mg	1.9	7439-95-4
Mn	0.9	7439-96-5
Nd	0.8	7440-00-8
Al	0.7	7429-90-5
Pr	0.7	7440-10-0

IC ICM C22C019-00

ICS H01M004-24; H01M004-38; H01M010-30

CC 56-3 (Nonferrous Metals and Alloys)

Section cross-reference(s): 52

ST hydrogen occlusion alloy alk secondary **battery**; rare earth nickel magnesium alloy hydrogen occlusion

IT Electric vehicles

(automobiles; hydrogen occlusion alloy and its use in alk. secondary **battery**, hybrid cars or elec. cars)

- IT Automobiles  
(elec.; hydrogen occlusion alloy and its use in alk. secondary **battery**, hybrid cars or elec. cars)
- IT Secondary **batteries**  
(hydrogen occlusion alloy and its use in alk. secondary **battery**, hybrid cars or elec. cars)
- IT Rare earth metals, processes  
(hydrogen occlusion alloy and its use in alk. secondary **battery**, hybrid cars or elec. cars)
- IT **402739-84-8 402739-85-9 402739-86-0**  
(hydrogen occlusion alloy and its use in alk. secondary **battery**, hybrid cars or elec. cars)

L45 ANSWER 24 OF 42 HCA COPYRIGHT 2005 ACS on STN  
136:56421 Nickel/hydrogen **battery**. Fukunaga, Hiroshi (Hitachi Maxell, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001357872 A2 20011226, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-180823 20000616.

AB The **battery** has a separator between a **Ni(OH)<sub>2</sub>** cathode rod and a tubular **H absorbing** alloy anode, where the anode surface area is 1.9-2.5 time the cathode surface area.

IT **1333-74-0**, Hydrogen, uses **12054-48-7**, **Nickel hydroxide [Ni(OH)<sub>2</sub>]** **383124-78-5**  
(controlled **hydrogen absorbing** alloy anode/  
**nickel hydroxide** cathode surface area ratio in  
nickel/hydrogen **batteries**)

RN 1333-74-0 HCA  
CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

RN 12054-48-7 HCA  
CN Nickel hydroxide (Ni(OH)<sub>2</sub>) (8CI, 9CI) (CA INDEX NAME)

HO-Ni-OH

RN 383124-78-5 HCA  
CN Nickel alloy, base, Ni 55, La 22, Co 9.3, Nb 5.2, Ce 4.1, Mn 2.4, Al 2.1, Mg 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
-----------	----------------------	------------------------------

=====+=====+=====

Ni	55	7440-02-0
La	22	7439-91-0
Co	9.3	7440-48-4
Nb	5.2	7440-03-1
Ce	4.1	7440-45-1
Mn	2.4	7439-96-5
Al	2.1	7429-90-5
Mg	0.2	7439-95-4

IC ICM H01M010-30  
ICS H01M004-24; H01M004-32; H01M004-38; H01M004-52  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST nickel hydrogen **battery** electrode surface area ratio  
IT Secondary **batteries**

(controlled **hydrogen absorbing** alloy anode/  
**nickel hydroxide** cathode surface area ratio in  
nickel/hydrogen **batteries**)

IT 1333-74-0, Hydrogen, uses 12054-48-7,

**Nickel hydroxide** [Ni(OH)

2] 383124-78-5

(controlled **hydrogen absorbing** alloy anode/  
**nickel hydroxide** cathode surface area ratio in  
nickel/hydrogen **batteries**)

L45 ANSWER 25 OF 42 HCA COPYRIGHT 2005 ACS on STN

135:374168 Secondary alkaline **battery**. Suzuki, Shuji; Irie,  
Shuichiro; Takeno, Kazuta (Toshiba Battery Co., Ltd., Japan). Jpn.  
Kokai Tokkyo Koho JP 2001325957 A2 20011122, 7 pp. (Japanese).  
CODEN: JKXXAF. APPLICATION: JP 2000-143440 20000516.

AB The **battery** uses a **H absorbing**

$\text{Ln}_1\text{-xMg}_x(\text{Ni}_1\text{-yMy})_z$  (Ln = lanthanoid elements, Ca, Sr, Sc, Y, Ti, Zr,  
and/or Hf; M = Li, V, Nb, Ta, Cr, Mo, Mn, Fe, Co, Al, Ga, Zn, Sn,  
In, Cu, Si, P and/or B;  $0 < x < 1$ ,  $y \leq 0.5$ ,  $2.5 \leq z \leq 4.5$ ) alloy anode contg. a rare earth (including Y) compd. at  
0.01-20% the mass of the alloy.

IT 1333-74-0, Hydrogen, uses 286414-73-1

(**hydrogen absorbing** alloy anodes contg. rare  
earth metal compd. additives for secondary alk. **batteries**  
)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

RN 286414-73-1 HCA

CN Nickel alloy, base, Ni 53, La 15, Nd 12, Co 8.8, Pr 4.2, Mg 2.3, Ce 1.4, Mn

1.3,Cr 0.9,Yb 0.6,Al 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	53	7440-02-0
La	15	7439-91-0
Nd	12	7440-00-8
Co	8.8	7440-48-4
Pr	4.2	7440-10-0
Mg	2.3	7439-95-4
Ce	1.4	7440-45-1
Mn	1.3	7439-96-5
Cr	0.9	7440-47-3
Yb	0.6	7440-64-4
Al	0.3	7429-90-5

IC ICM H01M004-38  
ICS C22C019-00; H01M004-24; H01M010-30

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary **battery hydrogen absorbing**  
alloy anode additive; **battery hydrogen**  
**absorbing** alloy anode rare earth compd

IT **Battery** anodes  
(**hydrogen absorbing** alloy anodes contg. rare  
earth metal compd. additives for secondary alk. **batteries**  
)

IT **1333-74-0, Hydrogen, uses 286414-73-1**  
(**hydrogen absorbing** alloy anodes contg. rare  
earth metal compd. additives for secondary alk. **batteries**  
)

IT 996-34-9 1308-87-8, Dysprosium oxide 1314-37-0, Ytterbia  
6067-34-1, Terbium carbonate 10043-27-3, Terbium nitrate  
10099-66-8, Lutetium chloride 10099-67-9, Lutetium nitrate  
10138-01-9, Europium nitrate 10138-52-0, Gadolinium chloride  
10143-38-1, Dysprosium nitrate 10168-80-6, Erbium nitrate  
10168-81-7, Gadolinium nitrate 10168-82-8, Holmium nitrate  
10361-83-8, Samarium nitrate 12061-16-4, Erbia 13478-49-4,  
Erbium sulfate 13628-51-8, Gadolinium phosphate 13760-80-0,  
Ytterbium fluoride 13760-83-3, Erbium fluoride 13863-49-5,  
Dysprosium phosphate 14985-19-4 15622-40-9, Holmium sulfate  
18779-07-2, Dysprosium acetate 20731-62-8, Thulium sulfate  
20981-49-1, Ytterbium triacetate 25880-71-1, Samarium carbonate  
(**hydrogen absorbing** alloy anodes contg. rare  
earth metal compd. additives for secondary alk. **batteries**  
)

135:360237 **Hydrogen-absorbing** nickel-rare earth-magnesium alloy and secondary alkaline **battery**. Irie, Shuichiro; Suzuki, Shuji; Takeno, Kazuta (Toshiba Battery Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001316744 A2 20011116, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-137202 20000510.

AB The **H-absorbing** alloy is represented as  $\text{Ln}_{1-x}\text{Mg}_x(\text{Ni}_{1-y}\text{Ti})_z$  (Ln = lanthanoids, Ca, Sr, Sc, Y, Ti, Zr, and/or Hf; Ln contains 10-50 at.% La; T = Li, V, Nb, Ta, Cr, Mo, Mn, Fe, Co, Al, Ga, Zn, Sn, In, Cu, Si, P, and/or B; 0.05  $\leq x < 0.20$ ;  $y = 0-0.5$ ;  $z = 2.8-3.9$ ). Claimed **battery** is equipped with an anode contg. the **H-absorbing** alloy. The **H-absorbing** alloy has high oxidn. resistance, **H absorptivity** at both low and high temp., and the **battery** shows high capacity and long cycle life.

IT 373380-01-9 373380-02-0

(**hydrogen-absorbing** Ni-rare earth-magnesium alloy for anode in alk. **battery**)

RN 373380-01-9 HCA

CN Nickel alloy, base, Ni 50, Nd 20, Co 10, La 9.3, Pr 5.6, Ce 1.7, Mn 1.2, Mg 1, Cr 0.6, Al 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	50	7440-02-0
Nd	20	7440-00-8
Co	10	7440-48-4
La	9.3	7439-91-0
Pr	5.6	7440-10-0
Ce	1.7	7440-45-1
Mn	1.2	7439-96-5
Mg	1	7439-95-4
Cr	0.6	7440-47-3
Al	0.3	7429-90-5

RN 373380-02-0 HCA

CN Nickel alloy, base, Ni 52, Nd 19, Co 10, La 8.9, Pr 5.3, Ce 1.6, Mn 1.3, Mg 1, Cr 0.6, Al 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	52	7440-02-0
Nd	19	7440-00-8
Co	10	7440-48-4
La	8.9	7439-91-0
Pr	5.3	7440-10-0

Ce	1.6	7440-45-1
Mn	1.3	7439-96-5
Mg	1	7439-95-4
Cr	0.6	7440-47-3
Al	0.3	7429-90-5

IT **1333-74-0, Hydrogen, uses**  
 (**hydrogen-absorbing** Ni-rare earth-magnesium  
 alloy for anode in alk. **battery**)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

IC ICM C22C019-00

ICS H01M004-38; H01M010-24

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 56

ST **hydrogen absorbing** nickel lanthanum magnesium  
 alloy anode alk **battery**

IT **Battery** anodes

Secondary **batteries**

(**hydrogen-absorbing** Ni-rare earth-magnesium  
 alloy for anode in alk. **battery**)

IT Rare earth alloys

(**hydrogen-absorbing** Ni-rare earth-magnesium  
 alloy for anode in alk. **battery**)

IT 373379-95-4 373379-96-5 373379-97-6 373379-98-7 373379-99-8  
 373380-00-8 **373380-01-9 373380-02-0**

(**hydrogen-absorbing** Ni-rare earth-magnesium  
 alloy for anode in alk. **battery**)

IT **1333-74-0, Hydrogen, uses**

(**hydrogen-absorbing** Ni-rare earth-magnesium  
 alloy for anode in alk. **battery**)

IT 7439-89-6, Iron, uses 7439-93-2, Lithium, uses 7439-98-7,  
 Molybdenum, uses 7440-03-1, Niobium, uses 7440-20-2, Scandium,  
 uses 7440-21-3, Silicon, uses 7440-24-6, Strontium, uses  
 7440-25-7, Tantalum, uses 7440-31-5, Tin, uses 7440-32-6,  
 Titanium, uses 7440-42-8, Boron, uses 7440-50-8, Copper, uses  
 7440-55-3, Gallium, uses 7440-58-6, Hafnium, uses 7440-62-2,  
 Vanadium, uses 7440-65-5, Yttrium, uses 7440-66-6, Zinc, uses  
 7440-67-7, Zirconium, uses 7440-70-2, Calcium, uses 7440-74-6,  
 Indium, uses 7723-14-0, Phosphorus, uses  
 (microalloying element; **hydrogen-absorbing**  
 Ni-rare earth-magnesium alloy for anode in alk. **battery**  
 )

L45 ANSWER 27 OF 42 HCA COPYRIGHT 2005 ACS on STN

135:139827 **Hydrogen-absorbing** alloy and secondary **battery**. Hayashida, Hirotaka; Yamamoto, Masaaki; Kitayama, Hiroshi; Inada, Shusuke; Sakai, Isao; Kono, Tatsuoki; Yoshida, Hideki; Inaba, Takamichi; Kanda, Motoya (Kabushiki Kaisha Toshiba, Japan). U.S. US 6268084 B1 20010731, 46 pp., Cont.-in-part of U. S. Ser. No. 200,464. (English). CODEN: USXXAM. APPLICATION: US 1999-475037 19991230. PRIORITY: JP 1997-329213 19971128; JP 1997-329214 19971128; JP 1997-329216 19971128; US 1998-200464 19981127.

AB There is provided a **hydrogen-absorbing** alloy comprising, as a principal phase, at least one kind of phase selected from the group consisting of a first phase having a hexagonal crystal system (excluding a phase having a CaCu<sub>5</sub> type crystal structure) and a second phase having a rhombohedral crystal system, the **hydrogen-absorbing** alloy having a compn. represented by the following general formula (1):  
 $R1-a-bMg_aTbNi_ZX-Y-.alpha.M1XM2YMn_{60}$  wherein R is at least one kind of element selected from rare earth elements (which include Y), T is at least one element selected from the group consisting of Ca, Ti, Zr and Hf; M1 is at least one element selected from the group consisting of Co and Fe; M2 is at least one element selected from the group consisting of Al, Ga, Zn, Sn, Cu, Si, B, Nb, W, Mo, V, Cr, Ta, Li, P and S; and the at. ratios of a, b, X, Y, .alpha. and Z are resp. a no. satisfying the conditions of:  $0.15 \leq a \leq 0.37$ ,  $0 \leq b \leq 0.3$ ,  $0 \leq X \leq 1.3$ ,  $0 \leq Y \leq 0.5$ ,  $0 \leq .alpha. \leq 0.135$ , and  $2.5 \leq Z \leq 4.2$ .

IT **11113-74-9, Nickel hydroxide**  
226418-72-0 227623-56-5 348627-26-9  
352028-73-0 352028-74-1 352028-75-2  
352028-76-3 352028-77-4 352028-80-9  
352028-81-0 352028-82-1 352028-83-2  
352028-84-3 352028-85-4 352028-86-5  
352028-87-6 352028-88-7 352028-89-8  
352028-91-2 352028-98-9 352028-99-0  
352029-00-6 352029-01-7 352029-02-8  
352029-03-9 352029-06-2 352029-08-4  
352029-15-3 352029-18-6 352029-27-7  
352029-31-3 352029-32-4 352029-34-6  
352029-37-9 352029-38-0 352029-39-1  
352029-41-5 352029-42-6 352029-43-7  
352029-48-2 352029-49-3 352029-50-6  
352029-52-8 352029-53-9 352029-54-0  
352029-58-4 352029-60-8 352029-65-3  
352029-67-5 352029-68-6 352029-71-1  
352029-72-2 352029-73-3 352029-74-4  
352029-78-8 352029-81-3

(**hydrogen-absorbing** alloy and secondary

**battery)**

RN 11113-74-9 HCA

CN Nickel hydroxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
HO	x	14280-30-9
Ni	x	7440-02-0

RN 226418-72-0 HCA

CN Nickel alloy, base, Ni 52,La 35,Co 10,Mg 2.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	52	7440-02-0
La	35	7439-91-0
Co	10	7440-48-4
Mg	2.6	7439-95-4

RN 227623-56-5 HCA

CN Nickel alloy, base, Ni 57,La 31,Co 6.8,Mg 3.2,Al 1.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	57	7440-02-0
La	31	7439-91-0
Co	6.8	7440-48-4
Mg	3.2	7439-95-4
Al	1.5	7429-90-5

RN 348627-26-9 HCA

CN Nickel alloy, base, Ni 63,La 33,Mg 1.5,Ce 1.3,Al 1,Zn 0.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	63	7440-02-0
La	33	7439-91-0
Mg	1.5	7439-95-4
Ce	1.3	7440-45-1
Al	1	7429-90-5
Zn	0.4	7440-66-6



RN 352028-73-0 HCA  
CN Nickel alloy, base, Ni 55,La 33,Co 9.1,Mg 2.1,Al 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	55	7440-02-0
La	33	7439-91-0
Co	9.1	7440-48-4
Mg	2.1	7439-95-4
Al	0.3	7429-90-5

RN 352028-74-1 HCA  
CN Nickel alloy, base, Ni 64,La 31,Mg 2.7,Nd 1,Ce 0.7,Al 0.6,Pr 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	64	7440-02-0
La	31	7439-91-0
Mg	2.7	7439-95-4
Nd	1	7440-00-8
Ce	0.7	7440-45-1
Al	0.6	7429-90-5
Pr	0.3	7440-10-0

RN 352028-75-2 HCA  
CN Nickel alloy, base, Ni 56,La 31,Co 6.6,Fe 3.1,Mg 1.6,Nd 1,Ce 0.7,Pr 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	56	7440-02-0
La	31	7439-91-0
Co	6.6	7440-48-4
Fe	3.1	7439-89-6
Mg	1.6	7439-95-4
Nd	1	7440-00-8
Ce	0.7	7440-45-1
Pr	0.3	7440-10-0

RN 352028-76-3 HCA  
CN Nickel alloy, base, Ni 46,La 29,Co 19,Sn 2.7,Y 1.2,Mg 1,Nd 1,Ce 0.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	46	7440-02-0
La	29	7439-91-0
Co	19	7440-48-4
Sn	2.7	7440-31-5
Y	1.2	7440-65-5
Mg	1	7439-95-4
Nd	1	7440-00-8
Ce	0.6	7440-45-1

RN 352028-77-4 HCA

CN Nickel alloy, base, Ni 56,La 29,Co 6.6,Cu 3.5,Mg 3.1,Nd 1,Ce 0.6,Pr 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	56	7440-02-0
La	29	7439-91-0
Co	6.6	7440-48-4
Cu	3.5	7440-50-8
Mg	3.1	7439-95-4
Nd	1	7440-00-8
Ce	0.6	7440-45-1
Pr	0.3	7440-10-0

RN 352028-80-9 HCA

CN Nickel alloy, base, Ni 47,La 34,Co 17,Mg 2.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	47	7440-02-0
La	34	7439-91-0
Co	17	7440-48-4
Mg	2.6	7439-95-4

RN 352028-81-0 HCA

CN Nickel alloy, base, Ni 59,La 32,Fe 4.9,Mg 2.3,Nd 1.1,Ce 0.7,Pr 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	32	7439-91-0

Fe	4.9	7439-89-6
Mg	2.3	7439-95-4
Nd	1.1	7440-00-8
Ce	0.7	7440-45-1
Pr	0.3	7440-10-0

RN 352028-82-1 HCA

CN Nickel alloy, base, Ni 55,La 24,Nd 11,Cr 6.8,Mg 1.9,Al 0.9 (9CI)  
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	55	7440-02-0
La	24	7439-91-0
Nd	11	7440-00-8
Cr	6.8	7440-47-3
Mg	1.9	7439-95-4
Al	0.9	7429-90-5

RN 352028-83-2 HCA

CN Nickel alloy, base, Ni 61,La 29,Ce 4.2,Mg 3.1,Ga 1.5,Nd 0.8,Pr 0.5,V  
0.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0
La	29	7439-91-0
Ce	4.2	7440-45-1
Mg	3.1	7439-95-4
Ga	1.5	7440-55-3
Nd	0.8	7440-00-8
Pr	0.5	7440-10-0
V	0.5	7440-62-2

RN 352028-84-3 HCA

CN Nickel alloy, base, Ni 62,La 31,Mg 2.9,Cu 1.4,Nd 1,Al 0.9,Ce 0.7,Pr  
0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	31	7439-91-0
Mg	2.9	7439-95-4
Cu	1.4	7440-50-8
Nd	1	7440-00-8

Al	0.9	7429-90-5
Ce	0.7	7440-45-1
Pr	0.3	7440-10-0

RN 352028-85-4 HCA

CN Nickel alloy, base, Ni 60,La 34,Sn 3.8,Mg 1.9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	60	7440-02-0
La	34	7439-91-0
Sn	3.8	7440-31-5
Mg	1.9	7439-95-4

RN 352028-86-5 HCA

CN Nickel alloy, base, Ni 54,La 32,Co 6.6,Si 2.5,Mg 2,Nd 1.1,Ce 0.7,Pr 0.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	54	7440-02-0
La	32	7439-91-0
Co	6.6	7440-48-4
Si	2.5	7440-21-3
Mg	2	7439-95-4
Nd	1.1	7440-00-8
Ce	0.7	7440-45-1
Pr	0.4	7440-10-0

RN 352028-87-6 HCA

CN Nickel alloy, base, Ni 57,La 21,Pr 13,Co 6.5,Mg 2.4,P 0.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	57	7440-02-0
La	21	7439-91-0
Pr	13	7440-10-0
Co	6.5	7440-48-4
Mg	2.4	7439-95-4
P	0.7	7723-14-0

RN 352028-88-7 HCA

CN Nickel alloy, base, Ni 47,La 27,Co 14,Cu 7.3,Y 2.6,Mg 1.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	47	7440-02-0
La	27	7439-91-0
Co	14	7440-48-4
Cu	7.3	7440-50-8
Y	2.6	7440-65-5
Mg	1.7	7439-95-4

RN 352028-89-8 HCA

CN Nickel alloy, base, Ni 56,La 33,Nb 7,V 2.2,Mg 1.8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	56	7440-02-0
La	33	7439-91-0
Nb	7	7440-03-1
V	2.2	7440-62-2
Mg	1.8	7439-95-4

RN 352028-91-2 HCA

CN Nickel alloy, base, Ni 63,La 29,Nb 3.1,Mg 2.2,Nd 1,Ce 0.6,Pr 0.3,Si 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	63	7440-02-0
La	29	7439-91-0
Nb	3.1	7440-03-1
Mg	2.2	7439-95-4
Nd	1	7440-00-8
Ce	0.6	7440-45-1
Pr	0.3	7440-10-0
Si	0.3	7440-21-3

RN 352028-98-9 HCA

CN Nickel alloy, base, Ni 63,La 34,Mg 1.9,Al 0.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	63	7440-02-0
La	34	7439-91-0

Mg	1.9	7439-95-4
Al	0.7	7429-90-5

RN 352028-99-0 HCA

CN Nickel alloy, base, Ni 63,La 28,Pr 6.6,Mg 2.1,Mn 0.4,Si 0.1 (9CI)  
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	63	7440-02-0
La	28	7439-91-0
Pr	6.6	7440-10-0
Mg	2.1	7439-95-4
Mn	0.4	7439-96-5
Si	0.1	7440-21-3

RN 352029-00-6 HCA

CN Nickel alloy, base, Ni 61,La 24,Nd 9.7,Mg 2.3,Co 2,Al 0.7,Fe 0.2  
(9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0
La	24	7439-91-0
Nd	9.7	7440-00-8
Mg	2.3	7439-95-4
Co	2	7440-48-4
Al	0.7	7429-90-5
Fe	0.2	7439-89-6

RN 352029-01-7 HCA

CN Nickel alloy, base, Ni 66,La 29,Mg 1.6,Nd 1,Al 0.8,Ce 0.6,Mo 0.3,Pr  
0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	66	7440-02-0
La	29	7439-91-0
Mg	1.6	7439-95-4
Nd	1	7440-00-8
Al	0.8	7429-90-5
Ce	0.6	7440-45-1
Mo	0.3	7439-98-7
Pr	0.3	7440-10-0

RN 352029-02-8 HCA  
 CN Nickel alloy, base, Ni 62,La 32,Mg 1.5,Nd 1.1,Co 0.9,Al 0.8,Ce 0.7,Ta 0.6,Mn 0.3,Pr 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	32	7439-91-0
Mg	1.5	7439-95-4
Nd	1.1	7440-00-8
Co	0.9	7440-48-4
Al	0.8	7429-90-5
Ce	0.7	7440-45-1
Ta	0.6	7440-25-7
Mn	0.3	7439-96-5
Pr	0.3	7440-10-0

RN 352029-03-9 HCA  
 CN Nickel alloy, base, Ni 63,La 32,Ce 2.1,Mg 1.5,Al 1,Zn 0.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	63	7440-02-0
La	32	7439-91-0
Ce	2.1	7440-45-1
Mg	1.5	7439-95-4
Al	1	7429-90-5
Zn	0.4	7440-66-6

RN 352029-06-2 HCA  
 CN Nickel alloy, base, Ni 63,La 32,Y 2.2,Co 1.5,Mg 1.4,Sn 0.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	63	7440-02-0
La	32	7439-91-0
Y	2.2	7440-65-5
Co	1.5	7440-48-4
Mg	1.4	7439-95-4
Sn	0.7	7440-31-5

RN 352029-08-4 HCA  
 CN Nickel alloy, base, Ni 63,La 31,Mg 2.5,Cu 1.1,Nd 1,Ce 0.7,Al 0.5,Pr

## 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	63	7440-02-0
La	31	7439-91-0
Mg	2.5	7439-95-4
Cu	1.1	7440-50-8
Nd	1	7440-00-8
Ce	0.7	7440-45-1
Al	0.5	7429-90-5
Pr	0.3	7440-10-0

RN 352029-15-3 HCA

CN Nickel alloy, base, Ni 62,La 29,Ce 3,Mg 1.6,Nd 1.4,Al 1,Ga 0.7,Pr 0.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	29	7439-91-0
Ce	3	7440-45-1
Mg	1.6	7439-95-4
Nd	1.4	7440-00-8
Al	1	7429-90-5
Ga	0.7	7440-55-3
Pr	0.6	7440-10-0

RN 352029-18-6 HCA

CN Nickel alloy, base, Ni 62,La 29,Ce 2.8,Mg 1.9,Nd 1.3,Co 1.1,Al 0.6,Mn 0.5,Pr 0.5,V 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	29	7439-91-0
Ce	2.8	7440-45-1
Mg	1.9	7439-95-4
Nd	1.3	7440-00-8
Co	1.1	7440-48-4
Al	0.6	7429-90-5
Mn	0.5	7439-96-5
Pr	0.5	7440-10-0
V	0.3	7440-62-2



RN 352029-27-7 HCA  
 CN Nickel alloy, base, Ni 62,La 33,Mg 1.8,Al 1.1,Nd 1.1,Ce 0.7,Pr 0.4  
 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	33	7439-91-0
Mg	1.8	7439-95-4
Al	1.1	7429-90-5
Nd	1.1	7440-00-8
Ce	0.7	7440-45-1
Pr	0.4	7440-10-0

RN 352029-31-3 HCA  
 CN Nickel alloy, base, Ni 61,La 31,Ce 2,Sn 1.9,Mg 1.7,Nd 1.2,Al 0.6,Pr  
 0.5,Co 0.4,Mn 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0
La	31	7439-91-0
Ce	2	7440-45-1
Sn	1.9	7440-31-5
Mg	1.7	7439-95-4
Nd	1.2	7440-00-8
Al	0.6	7429-90-5
Pr	0.5	7440-10-0
Co	0.4	7440-48-4
Mn	0.2	7439-96-5

RN 352029-32-4 HCA  
 CN Nickel alloy, base, Ni 59,La 32,Co 3.8,Mg 1.8,Nd 1.1,Al 1,Ce 0.7,Mn  
 0.4,Pr 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	32	7439-91-0
Co	3.8	7440-48-4
Mg	1.8	7439-95-4
Nd	1.1	7440-00-8
Al	1	7429-90-5
Ce	0.7	7440-45-1
Mn	0.4	7439-96-5

Pr 0.3 7440-10-0

RN 352029-34-6 HCA

CN Nickel alloy, base, Ni 59,La 30,Co 3.8,Ce 2,Mg 1.7,Nd 1.3,Al 0.6,Nb 0.6,Mn 0.5,Pr 0.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	30	7439-91-0
Co	3.8	7440-48-4
Ce	2	7440-45-1
Mg	1.7	7439-95-4
Nd	1.3	7440-00-8
Al	0.6	7429-90-5
Nb	0.6	7440-03-1
Mn	0.5	7439-96-5
Pr	0.5	7440-10-0

RN 352029-37-9 HCA

CN Nickel alloy, base, Ni 66,La 29,Mg 1.6,Ga 1.1,Nd 1,Ce 0.6,Si 0.4,Pr 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	66	7440-02-0
La	29	7439-91-0
Mg	1.6	7439-95-4
Ga	1.1	7440-55-3
Nd	1	7440-00-8
Ce	0.6	7440-45-1
Si	0.4	7440-21-3
Pr	0.3	7440-10-0

RN 352029-38-0 HCA

CN Nickel alloy, base, Ni 51,La 34,Co 12,Mg 2.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	51	7440-02-0
La	34	7439-91-0
Co	12	7440-48-4
Mg	2.5	7439-95-4

RN 352029-39-1 HCA

CN Nickel alloy, base, Ni 41,La 31,Cu 27,Mg 1.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	41	7440-02-0
La	31	7439-91-0
Cu	27	7440-50-8
Mg	1.4	7439-95-4

RN 352029-41-5 HCA

CN Nickel alloy, base, Ni 53,La 23,Fe 12,Gd 8.2,Mg 3,Nd 0.8,Ce 0.5,Pr 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	53	7440-02-0
La	23	7439-91-0
Fe	12	7439-89-6
Gd	8.2	7440-54-2
Mg	3	7439-95-4
Nd	0.8	7440-00-8
Ce	0.5	7440-45-1
Pr	0.2	7440-10-0

RN 352029-42-6 HCA

CN Nickel alloy, base, Ni 60,La 19,Ce 9.8,Cr 5.5,Mg 3.4,Zn 2.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	60	7440-02-0
La	19	7439-91-0
Ce	9.8	7440-45-1
Cr	5.5	7440-47-3
Mg	3.4	7439-95-4
Zn	2.3	7440-66-6

RN 352029-43-7 HCA

CN Nickel alloy, base, Ni 52,La 30,Co 15,Mg 2.6,Al 1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	52	7440-02-0

La	30	7439-91-0
Co	15	7440-48-4
Mg	2.6	7439-95-4
Al	1	7429-90-5

RN 352029-48-2 HCA

CN Nickel alloy, base, Ni 63,La 32,Mg 1.8,Nd 1.1,Al 0.8,Ce 0.7,Pr 0.3  
(9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	63	7440-02-0
La	32	7439-91-0
Mg	1.8	7439-95-4
Nd	1.1	7440-00-8
Al	0.8	7429-90-5
Ce	0.7	7440-45-1
Pr	0.3	7440-10-0

RN 352029-49-3 HCA

CN Nickel alloy, base, Ni 63,La 28,Nd 6.6,Mg 1.8,Mn 0.4,Si 0.1 (9CI)  
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	63	7440-02-0
La	28	7439-91-0
Nd	6.6	7440-00-8
Mg	1.8	7439-95-4
Mn	0.4	7439-96-5
Si	0.1	7440-21-3

RN 352029-50-6 HCA

CN Nickel alloy, base, Ni 61,La 25,Pr 9.2,Co 1.9,Mg 1.8,Al 0.7,Fe 0.2  
(9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0
La	25	7439-91-0
Pr	9.2	7440-10-0
Co	1.9	7440-48-4
Mg	1.8	7439-95-4
Al	0.7	7429-90-5
Fe	0.2	7439-89-6

RN 352029-52-8 HCA

CN Nickel alloy, base, Ni 62,La 32,Mg 1.5,Nd 1.1,Al 0.9,Co 0.9,Ce 0.7,Mn 0.3,Mo 0.3,Pr 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	32	7439-91-0
Mg	1.5	7439-95-4
Nd	1.1	7440-00-8
Al	0.9	7429-90-5
Co	0.9	7440-48-4
Ce	0.7	7440-45-1
Mn	0.3	7439-96-5
Mo	0.3	7439-98-7
Pr	0.3	7440-10-0

RN 352029-53-9 HCA

CN Nickel alloy, base, Ni 61,La 31,Sn 2.9,Y 2.1,Co 1.4,Mg 1.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0
La	31	7439-91-0
Sn	2.9	7440-31-5
Y	2.1	7440-65-5
Co	1.4	7440-48-4
Mg	1.3	7439-95-4

RN 352029-54-0 HCA

CN Nickel alloy, base, Ni 62,La 31,Mg 2.1,Co 1,Nd 1,Al 0.7,Ce 0.7,Ta 0.6,Pr 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	31	7439-91-0
Mg	2.1	7439-95-4
Co	1	7440-48-4
Nd	1	7440-00-8
Al	0.7	7429-90-5
Ce	0.7	7440-45-1
Ta	0.6	7440-25-7

Pr 0.3 7440-10-0

RN 352029-58-4 HCA

CN Nickel alloy, base, Ni 62,La 31,Ce 2.3,Mg 1.9,Nd 1.3,Al 1.1,Ga 0.5,Pr 0.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	31	7439-91-0
Ce	2.3	7440-45-1
Mg	1.9	7439-95-4
Nd	1.3	7440-00-8
Al	1.1	7429-90-5
Ga	0.5	7440-55-3
Pr	0.5	7440-10-0

RN 352029-60-8 HCA

CN Nickel alloy, base, Ni 62,La 29,Ce 3.1,Mg 1.8,Nd 1.4,Al 0.9,Co 0.6,Pr 0.6,V 0.3,Mn 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	29	7439-91-0
Ce	3.1	7440-45-1
Mg	1.8	7439-95-4
Nd	1.4	7440-00-8
Al	0.9	7429-90-5
Co	0.6	7440-48-4
Pr	0.6	7440-10-0
V	0.3	7440-62-2
Mn	0.2	7439-96-5

RN 352029-65-3 HCA

CN Nickel alloy, base, Ni 62,La 31,Ce 2,Mg 1.7,Nd 1.2,Sn 0.8,Al 0.6,Pr 0.5,Co 0.4,Mn 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	31	7439-91-0
Ce	2	7440-45-1
Mg	1.7	7439-95-4
Nd	1.2	7440-00-8

Sn	0.8	7440-31-5
Al	0.6	7429-90-5
Pr	0.5	7440-10-0
Co	0.4	7440-48-4
Mn	0.2	7439-96-5

RN 352029-67-5 HCA

CN Nickel alloy, base, Ni 58,La 31,Co 3.8,Ce 2,Mg 1.7,Nd 1.2,Al 0.6,Nb 0.6,Mn 0.5,Pr 0.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	58	7440-02-0
La	31	7439-91-0
Co	3.8	7440-48-4
Ce	2	7440-45-1
Mg	1.7	7439-95-4
Nd	1.2	7440-00-8
Al	0.6	7429-90-5
Nb	0.6	7440-03-1
Mn	0.5	7439-96-5
Pr	0.5	7440-10-0

RN 352029-68-6 HCA

CN Nickel alloy, base, Ni 62,La 34,Mg 1.8,Al 0.8,Ce 0.4,Co 0.4,Nd 0.4,Pr 0.4,P 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	34	7439-91-0
Mg	1.8	7439-95-4
Al	0.8	7429-90-5
Ce	0.4	7440-45-1
Co	0.4	7440-48-4
Nd	0.4	7440-00-8
Pr	0.4	7440-10-0
P	0.1	7723-14-0

RN 352029-71-1 HCA

CN Nickel alloy, base, Ni 62,La 34,Mg 1.7,Al 1,Ce 0.4,Nd 0.4,Pr 0.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
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Ni	62	7440-02-0
La	34	7439-91-0
Mg	1.7	7439-95-4
Al	1	7429-90-5
Ce	0.4	7440-45-1
Nd	0.4	7440-00-8
Pr	0.4	7440-10-0

RN 352029-72-2 HCA

CN Nickel alloy, base, Ni 62,La 16,Nd 14,Pr 4.2,Mg 1.9,Ce 1,Al 0.7,Cu 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	16	7439-91-0
Nd	14	7440-00-8
Pr	4.2	7440-10-0
Mg	1.9	7439-95-4
Ce	1	7440-45-1
Al	0.7	7429-90-5
Cu	0.2	7440-50-8

RN 352029-73-3 HCA

CN Nickel alloy, base, Ni 62,La 17,Nd 14,Pr 3.5,Mg 2.1,Al 0.6,Ce 0.3,Nb 0.3,Zn 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	17	7439-91-0
Nd	14	7440-00-8
Pr	3.5	7440-10-0
Mg	2.1	7439-95-4
Al	0.6	7429-90-5
Ce	0.3	7440-45-1
Nb	0.3	7440-03-1
Zn	0.2	7440-66-6

RN 352029-74-4 HCA

CN Nickel alloy, base, Ni 59,La 30,Co 3.5,Nd 3.2,Mg 1.7,Al 1.2,Sn 0.4,Ce 0.3,Pr 0.3,Cu 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
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Ni	59	7440-02-0
La	30	7439-91-0
Co	3.5	7440-48-4
Nd	3.2	7440-00-8
Mg	1.7	7439-95-4
Al	1.2	7429-90-5
Sn	0.4	7440-31-5
Ce	0.3	7440-45-1
Pr	0.3	7440-10-0
Cu	0.2	7440-50-8

RN 352029-78-8 HCA

CN Nickel alloy, base, Ni 63,La 31,Mg 2,Nd 1.8,Al 0.7,Co 0.4,In 0.4,Ce 0.3,Pr 0.3,V 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	63	7440-02-0
La	31	7439-91-0
Mg	2	7439-95-4
Nd	1.8	7440-00-8
Al	0.7	7429-90-5
Co	0.4	7440-48-4
In	0.4	7440-74-6
Ce	0.3	7440-45-1
Pr	0.3	7440-10-0
V	0.2	7440-62-2

RN 352029-81-3 HCA

CN Nickel alloy, base, Ni 62,La 35,Mg 1.9,Al 0.7,Nd 0.4,Co 0.2,Mn 0.2,Y 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	35	7439-91-0
Mg	1.9	7439-95-4
Al	0.7	7429-90-5
Nd	0.4	7440-00-8
Co	0.2	7440-48-4
Mn	0.2	7439-96-5
Y	0.2	7440-65-5

IC ICM H01M004-58

INCL 429218200

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56

- ST **battery** anode **hydrogen absorbing** alloy
- IT Secondary **batteries**  
(**Ni-H**; **hydrogen-absorbing** alloy and secondary **battery**)
- IT **Battery** anodes  
(**hydrogen-absorbing** alloy and secondary **battery**)
- IT Fluoropolymers, uses  
(**hydrogen-absorbing** alloy and secondary **battery**)
- IT 25214-24-8, Acrylic acid-propylene copolymer  
(fabric; **hydrogen-absorbing** alloy and secondary **battery**)
- IT 1310-58-3, Potassium hydroxide, uses 1310-65-2, Lithium hydroxide  
1310-73-2, Sodium hydroxide, uses **11113-74-9**,  
**Nickel hydroxide 226418-72-0**  
**227623-56-5 348627-26-9 352028-73-0**  
**352028-74-1 352028-75-2 352028-76-3**  
**352028-77-4 352028-78-5 352028-79-6 352028-80-9**  
**352028-81-0 352028-82-1 352028-83-2**  
**352028-84-3 352028-85-4 352028-86-5**  
**352028-87-6 352028-88-7 352028-89-8**  
352028-90-1 **352028-91-2** 352028-92-3 352028-93-4  
352028-94-5 352028-95-6 352028-96-7 352028-97-8  
**352028-98-9 352028-99-0 352029-00-6**  
**352029-01-7 352029-02-8 352029-03-9**  
**352029-06-2 352029-08-4 352029-12-0**  
**352029-15-3 352029-18-6 352029-19-7**  
352029-22-2 352029-24-4 **352029-27-7 352029-31-3**  
**352029-32-4 352029-34-6 352029-37-9**  
**352029-38-0 352029-39-1 352029-41-5**  
**352029-42-6 352029-43-7 352029-44-8**  
352029-46-0 352029-47-1 **352029-48-2 352029-49-3**  
**352029-50-6 352029-51-7 352029-52-8**  
**352029-53-9 352029-54-0 352029-58-4**  
**352029-60-8 352029-61-9 352029-62-0 352029-63-1**  
**352029-65-3 352029-67-5 352029-68-6**  
352029-69-7 **352029-71-1 352029-72-2**  
**352029-73-3 352029-74-4 352029-75-5**  
352029-77-7 **352029-78-8 352029-80-2 352029-81-3**  
(**hydrogen-absorbing** alloy and secondary **battery**)
- IT 11104-61-3, Cobalt oxide  
(**hydrogen-absorbing** alloy and secondary **battery**)
- IT 9002-84-0, Ptfе 9003-04-7, Sodium polyacrylate 9004-32-4, Cmc  
12597-69-2, Steel, uses 12713-90-5, uses 12724-44-6, uses

(**hydrogen-absorbing** alloy and secondary  
**battery**)

IT 7440-02-0, Nickel, uses  
(powder; **hydrogen-absorbing** alloy and  
secondary **battery**)

L45 ANSWER 28 OF 42 HCA COPYRIGHT 2005 ACS on STN

134:370341 Soldering alloy. Hillen, Frank; Rass, Ino; Lugscheider,  
Erich (Euromat G.m.b.H., Germany). PCT Int. Appl. WO 2001034860 A1  
20010517, 50 pp. DESIGNATED STATES: W: JP, US; RW: AT, BE, CH, CY,  
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR.  
(German). CODEN: PIXXD2. APPLICATION: WO 2000-EP10933 20001106.  
PRIORITY: DE 1999-19953670 19991108.

AB The invention relates to a soldering alloy consisting of an element  
or a mixt. of elements chosen from the following group: Cu, Ag, and  
Sb totalling 0.1-40 wt.%, as the 1st component; an element or mixt.  
of elements chosen from the following group: the rare earth elements  
totalling 0.01-20 wt.%, as the 2nd component; a total of 0-10 wt.%  
of the element Ga as the 3rd component; an element or a mixt. of  
elements chosen from the following group: Fe, Ni, Co, Mn, and Cr  
totalling 0-5 wt.%, as the 4th component; an element or a mixt. of  
elements chosen from the following group: Ti, Zr, Hf, V, Nb, and Ta  
totalling 0-0.9 wt.%, as the 5th component; a reinforcement  
component chosen from the following group: Al<sub>2</sub>O<sub>3</sub>, AlN, Si<sub>3</sub>N<sub>4</sub>, SiC,  
TiC, and **graphite** totalling 0-40 vol.%, as the 6th  
component; an element or a mixt. of elements chosen from the  
following group: Al, Mg, Zn, Sn, In, Bi, and Pb, as the remainder;  
and the usual impurities. The invention also relates to a method  
and a device for processing the soldering alloy.

IT **339536-30-0**  
(soldering alloy)

RN 339536-30-0 HCA

CN Magnesium alloy, base, Mg 58,Cu 30,Al 10,Ce 1.2,Ni 1,Ga 0.1 (9CI)  
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Mg	58	7439-95-4
Cu	30	7440-50-8
Al	10	7429-90-5
Ce	1.2	7440-45-1
Ni	1	7440-02-0
Ga	0.1	7440-55-3

IC ICM C22C011-00

ICS C22C013-00; C22C018-00; C22C021-00; C22C023-00; B23K001-06;  
B23K001-08; B23K003-06; B23K003-08

CC 56-3 (Nonferrous Metals and Alloys)  
 Section cross-reference(s): 76

IT 339536-23-1 339536-24-2 339536-25-3 339536-26-4 339536-27-5  
 339536-28-6 339536-29-7 **339536-30-0** 339536-31-1  
 339536-32-2 339536-33-3  
 (soldering alloy)

L45 ANSWER 29 OF 42 HCA COPYRIGHT 2005 ACS on STN  
 134:329050 Alkaline secondary **battery**. Irie, Shuichiro;  
 Suzuki, Shuji; Morikawa, Akiko; Wakabayashi, Makoto (Toshiba Battery  
 Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001118597 A2  
 20010427, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
 1999-292728 19991014.

AB The **battery** has a cathode of a Ni compd. contg. a Co  
 compd. or metal Co, an anode of **H-absorbing**  
 alloy, and an alk. electrolyte. The cathode active mass is coated  
 with an elec. conductor before initial charge. The alk. electrolyte  
 dissolves Al or contacts with an Al compd. The **battery**  
 has high capacity and a long cycle life.

IT **1333-74-0**, Hydrogen, uses  
 (anode alloy contg., absorbed; alk. **battery** having  
**hydrogen-absorbing** alloy anode for high  
 capacity and long cycle life)

RN 1333-74-0 HCA  
 CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

IT **278799-16-9**  
 (anode, **hydrogen-absorbing**; alk.  
**battery** having **hydrogen-absorbing**  
 alloy anode for high capacity and long cycle life)

RN 278799-16-9 HCA  
 CN Nickel alloy, base, Ni 51,La 34,Co 10,Mg 2.6,Mn 1.2,Cr 0.6,Al 0.3  
 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	51	7440-02-0
La	34	7439-91-0
Co	10	7440-48-4
Mg	2.6	7439-95-4
Mn	1.2	7439-96-5
Cr	0.6	7440-47-3
Al	0.3	7429-90-5

IT 12054-48-7, **Nickel hydroxide**  
(cathode; alk. **battery** having **hydrogen-**  
**absorbing** alloy anode for high capacity and long cycle  
life)

RN 12054-48-7 HCA

CN Nickel hydroxide (Ni(OH)2) (8CI, 9CI) (CA INDEX NAME)

HO-Ni-OH

IC ICM H01M010-30  
ICS H01M004-32; H01M004-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST alk **battery hydrogen absorbing** alloy  
anode; nickel alk **battery** cathode conductor coating

IT **Battery** anodes  
Secondary **batteries**  
(alk. **battery** having **hydrogen-**  
**absorbing** alloy anode for high capacity and long cycle  
life)

IT **Battery** electrolytes  
(alk., Al-contg.; alk. **battery** having **hydrogen**  
**-absorbing** alloy anode for high capacity and long cycle  
life)

IT **Battery** cathodes  
(nickel compd. contg. cobalt, coated with elec. conductor; alk.  
**battery** having **hydrogen-absorbing**  
alloy anode for high capacity and long cycle life)

IT 1333-74-0, Hydrogen, uses  
(anode alloy contg., absorbed; alk. **battery** having  
**hydrogen-absorbing** alloy anode for high  
capacity and long cycle life)

IT 278799-16-9 335640-59-0  
(anode, **hydrogen-absorbing**; alk.  
**battery** having **hydrogen-absorbing**  
alloy anode for high capacity and long cycle life)

IT 7440-48-4, Cobalt, uses 21041-93-0, Cobalt hydroxide (co(oh2))  
(cathode contg.; alk. **battery** having **hydrogen**  
**-absorbing** alloy anode for high capacity and long cycle  
life)

IT 12054-48-7, **Nickel hydroxide**  
(cathode; alk. **battery** having **hydrogen-**  
**absorbing** alloy anode for high capacity and long cycle  
life)

IT 1307-96-6P, Cobalt monoxide, uses 7440-02-0P, Nickel, uses  
(deposited on cathode; alk. **battery** having  
**hydrogen-absorbing** alloy anode for high  
capacity and long cycle life)

IT 7429-90-5, Aluminum, uses 21645-51-2, Aluminum hydroxide, uses (electrolyte contg.; alk. **battery** having **hydrogen-absorbing** alloy anode for high capacity and long cycle life)

L45 ANSWER 30 OF 42 HCA COPYRIGHT 2005 ACS on STN  
 134:134111 **Hydrogen absorbing** alloy and nickel-metal hydride rechargeable **battery**. Maeda, Takao; Shima, Satoshi; Shinya, Naofumi (Shin-Etsu Chemical Co., Ltd., Japan). Eur. Pat. Appl. EP 1075032 A1 20010207, 14 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2000-115026 20000724. PRIORITY: JP 1999-221990 19990805; JP 2000-189040 20000623.

AB An object of the present invention is to provide a **hydrogen absorbing** alloy which can improve a high rate discharge property while suppressing particle size redn., exhibits cycle life characteristics equal to or higher than those of conventional alloys even when its cobalt content is decreased, and has a high capacity. Specifically, the present invention provides a **hydrogen absorbing** alloy having a CaCu5 type crystal structure in its principal phase, wherein the La content in the alloy is in the range of 24 to 33% by wt. and the Mg or Ca content in the alloy is in the range of 0.1 to 1.0% by wt., as well as the aforesaid alloy wherein the Co content in the alloy is not greater than 9% by wt.

IT **321852-18-0P 321852-19-1P 321852-21-5P**  
**321852-22-6P 321852-23-7P 321852-24-8P**  
**321852-25-9P 321852-28-2P 321852-29-3P**  
**321852-30-6P 321852-31-7P 321852-39-5P**  
**321852-40-8P 321852-41-9P 321852-42-0P**  
 (hydrogen absorbing alloy and nickel-metal hydride rechargeable **battery**)

RN 321852-18-0 HCA

CN Nickel alloy, base, Ni 57,La 25,Co 5.3,Mn 4.6,Ce 3.2,Pr 1.9,Al 1.8,Nd 1.3,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	57	7440-02-0
La	25	7439-91-0
Co	5.3	7440-48-4
Mn	4.6	7439-96-5
Ce	3.2	7440-45-1
Pr	1.9	7440-10-0
Al	1.8	7429-90-5
Nd	1.3	7440-00-8
Mg	0.3	7439-95-4

RN 321852-19-1 HCA

CN Nickel alloy, base, Ni 59,La 26,Ce 3.9,Mn 3.8,Co 2.7,Al 2.4,Nd 1.3,Pr 1.3,Mg 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	26	7439-91-0
Ce	3.9	7440-45-1
Mn	3.8	7439-96-5
Co	2.7	7440-48-4
Al	2.4	7429-90-5
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.2	7439-95-4

RN 321852-21-5 HCA

CN Nickel alloy, base, Ni 59,La 25,Ce 3.8,Mn 3.7,Al 3,Co 2.6,Nd 1.3,Pr 1.3,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	25	7439-91-0
Ce	3.8	7440-45-1
Mn	3.7	7439-96-5
Al	3	7429-90-5
Co	2.6	7440-48-4
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.3	7439-95-4

RN 321852-22-6 HCA

CN Nickel alloy, base, Ni 59,La 25,Mn 5,Ce 3.7,Co 2.6,Al 2.3,Nd 1.3,Pr 1.2,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	25	7439-91-0
Mn	5	7439-96-5
Ce	3.7	7440-45-1
Co	2.6	7440-48-4
Al	2.3	7429-90-5

Nd	1.3	7440-00-8
Pr	1.2	7440-10-0
Mg	0.3	7439-95-4

RN 321852-23-7 HCA

CN Nickel alloy, base, Ni 59,La 27,Ce 3.9,Mn 3.8,Co 2.7,Al 2.3,Nd 1.3,Pr 1.3,Mg 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	27	7439-91-0
Ce	3.9	7440-45-1
Mn	3.8	7439-96-5
Co	2.7	7440-48-4
Al	2.3	7429-90-5
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.2	7439-95-4

RN 321852-24-8 HCA

CN Nickel alloy, base, Ni 59,La 26,Ce 3.9,Mn 3.8,Co 2.7,Al 2.4,Nd 1.3,Pr 1.3,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	26	7439-91-0
Ce	3.9	7440-45-1
Mn	3.8	7439-96-5
Co	2.7	7440-48-4
Al	2.4	7429-90-5
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.3	7439-95-4

RN 321852-25-9 HCA

CN Nickel alloy, base, Ni 59,La 25,Mn 4.4,Ce 3.8,Co 2.6,Al 2.4,Nd 1.3,Pr 1.3,Mg 0.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	25	7439-91-0
Mn	4.4	7439-96-5



Ce	3.8	7440-45-1
Co	2.6	7440-48-4
Al	2.4	7429-90-5
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.6	7439-95-4

RN 321852-28-2 HCA

CN Nickel alloy, base, Ni 56,La 26,Co 5.4,Ce 3.9,Mn 3.8,Al 2.4,Nd 1.3,Pr 1.3,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	56	7440-02-0
La	26	7439-91-0
Co	5.4	7440-48-4
Ce	3.9	7440-45-1
Mn	3.8	7439-96-5
Al	2.4	7429-90-5
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.3	7439-95-4

RN 321852-29-3 HCA

CN Nickel alloy, base, Ni 54,La 25,Co 8.6,Ce 3.8,Mn 3.8,Al 1.9,Nd 1.3,Pr 1.3,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	54	7440-02-0
La	25	7439-91-0
Co	8.6	7440-48-4
Ce	3.8	7440-45-1
Mn	3.8	7439-96-5
Al	1.9	7429-90-5
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.3	7439-95-4

RN 321852-30-6 HCA

CN Nickel alloy, base, Ni 58,La 25,Mn 4.5,Co 4,Ce 3.8,Al 2,Nd 1.3,Pr 1.3,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	58	7440-02-0
La	25	7439-91-0
Mn	4.5	7439-96-5
Co	4	7440-48-4
Ce	3.8	7440-45-1
Al	2	7429-90-5
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.3	7439-95-4

Ni	58	7440-02-0
La	25	7439-91-0
Mn	4.5	7439-96-5
Co	4	7440-48-4
Ce	3.8	7440-45-1
Al	2	7429-90-5
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.3	7439-95-4

RN 321852-31-7 HCA

CN Nickel alloy, base, Ni 56,La 25,Co 5.3,Mn 4.8,Ce 3.8,Al 1.8,Nd 1.3,Pr 1.3,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Ni	56	7440-02-0
La	25	7439-91-0
Co	5.3	7440-48-4
Mn	4.8	7439-96-5
Ce	3.8	7440-45-1
Al	1.8	7429-90-5
Nd	1.3	7440-00-8
Pr	1.3	7440-10-0
Mg	0.3	7439-95-4

RN 321852-39-5 HCA

CN Nickel alloy, base, Ni 54,La 30,Co 8.1,Mn 3.8,Al 1.9,Ce 1,Mg 0.3,Nd 0.3,Pr 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Ni	54	7440-02-0
La	30	7439-91-0
Co	8.1	7440-48-4
Mn	3.8	7439-96-5
Al	1.9	7429-90-5
Ce	1	7440-45-1
Mg	0.3	7439-95-4
Nd	0.3	7440-00-8
Pr	0.3	7440-10-0

RN 321852-40-8 HCA

CN Nickel alloy, base, Ni 54,La 29,Co 8.1,Mn 3.8,Ce 2.6,Al 1.9,Mg 0.3,Nd 0.3,Pr 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	54	7440-02-0
La	29	7439-91-0
Co	8.1	7440-48-4
Mn	3.8	7439-96-5
Ce	2.6	7440-45-1
Al	1.9	7429-90-5
Mg	0.3	7439-95-4
Nd	0.3	7440-00-8
Pr	0.3	7440-10-0

RN 321852-41-9 HCA

CN Nickel alloy, base, Ni 54,La 27,Co 8.1,Ce 3.9,Mn 3.8,Al 1.9,Pr 0.6,Mg 0.3,Nd 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	54	7440-02-0
La	27	7439-91-0
Co	8.1	7440-48-4
Ce	3.9	7440-45-1
Mn	3.8	7439-96-5
Al	1.9	7429-90-5
Pr	0.6	7440-10-0
Mg	0.3	7439-95-4
Nd	0.3	7440-00-8

RN 321852-42-0 HCA

CN Nickel alloy, base, Ni 54,La 24,Co 8.1,Ce 6.4,Mn 3.8,Al 1.9,Pr 1,Nd 0.7,Mg 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	54	7440-02-0
La	24	7439-91-0
Co	8.1	7440-48-4
Ce	6.4	7440-45-1
Mn	3.8	7439-96-5
Al	1.9	7429-90-5
Pr	1	7440-10-0
Nd	0.7	7440-00-8
Mg	0.3	7439-95-4

IT 1333-74-0, Hydrogen, uses

(**hydrogen absorbing** alloy and nickel-metal  
hydride rechargeable **battery**)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H- H

IC H01M004-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 56

ST **battery** anode **hydrogen absorbing**  
alloy; mischmetal alloy **hydrogen absorbing** anode  
**battery**

IT **Battery** anodes

Secondary **batteries**

(**hydrogen absorbing** alloy and nickel-metal  
hydride rechargeable **battery**)

IT **321852-18-0P 321852-19-1P 321852-20-4P**

**321852-21-5P 321852-22-6P 321852-23-7P**

**321852-24-8P 321852-25-9P 321852-28-2P**

**321852-29-3P 321852-30-6P 321852-31-7P**

321852-32-8P 321852-33-9P 321852-34-0P 321852-35-1P

321852-36-2P 321852-37-3P 321852-38-4P **321852-39-5P**

**321852-40-8P 321852-41-9P 321852-42-0P**

321852-43-1P 321852-44-2P 321852-45-3P 321852-46-4P

321852-47-5P

(**hydrogen absorbing** alloy and nickel-metal  
hydride rechargeable **battery**)

IT **1333-74-0, Hydrogen, uses**

(**hydrogen absorbing** alloy and nickel-metal  
hydride rechargeable **battery**)

L45 ANSWER 31 OF 42 HCA COPYRIGHT 2005 ACS on STN

133:338669 Al-Zn-Mg-Cu-series alloy welding filler and heat treatment of  
the filler-added welding joints. Okita, Tomiharu; Okada, Toshiya  
(Furukawa Electric Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP  
2000317676 A2 20001121, 19 pp. (Japanese). CODEN: JKXXAF.  
APPLICATION: JP 1999-132040 19990512.

AB The welding filler contains Zn 5-8, Mg 1-3, Cu 2-4, Sc 0.03-3.0, Cr  
0.05-0.2, V 0.01-0.5, Ti 0.005-0.2, Ag 0.03-2 wt.%, and Al as the  
balance. The filler-added welding joints of Al-Zn-Mg-Cu-series  
alloy having tensile strength .gtoreq.500 N/mm2 are treated by  
solutioning at 450-490.degree. for .gtoreq.1 min, hardened by  
quenching at 250-400.degree./s and maintaining at 10-50.degree. for  
.gtoreq.24 h, and then aging treatment at 110-180.degree. for 5-72  
h. The treated welded joints are superior in toughness and  
resistant stress corrosion crack characteristics.

## IT 304681-75-2 304681-76-3 304681-77-4

(Al-Zn-Mg-Cu-series alloy welding filler and heat treatment of the filler-added welding joints)

RN 304681-75-2 HCA

CN Aluminum alloy, base, Al 88,Zn 6.5,Cu 3.1,Mg 2,Ni 0.3,Cr 0.1,Sc 0.1,V 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Al	88	7429-90-5
Zn	6.5	7440-66-6
Cu	3.1	7440-50-8
Mg	2	7439-95-4
Ni	0.3	7440-02-0
Cr	0.1	7440-47-3
Sc	0.1	7440-20-2
V	0.1	7440-62-2

RN 304681-76-3 HCA

CN Aluminum alloy, base, Al 87,Zn 6.5,Cu 3.1,Mg 2,Sc 1,Ni 0.6,Cr 0.1,V 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Al	87	7429-90-5
Zn	6.5	7440-66-6
Cu	3.1	7440-50-8
Mg	2	7439-95-4
Sc	1	7440-20-2
Ni	0.6	7440-02-0
Cr	0.1	7440-47-3
V	0.1	7440-62-2

RN 304681-77-4 HCA

CN Aluminum alloy, base, Al 84,Zn 6.5,Cu 3.1,Sc 3,Mg 2,Ni 1,Cr 0.1,V 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Al	84	7429-90-5
Zn	6.5	7440-66-6
Cu	3.1	7440-50-8
Sc	3	7440-20-2
Mg	2	7439-95-4
Ni	1	7440-02-0

Cr 0.1 7440-47-3  
V 0.1 7440-62-2

IT **7440-44-0**, Carbon, processes  
(microalloying with; Al-Zn-Mg-Cu-series alloy welding filler and  
heat treatment of the filler-added welding joints)  
RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IC ICM B23K035-28  
ICS B23K035-40  
CC 56-9 (Nonferrous Metals and Alloys)  
IT 12627-49-5, Aa 7075 304681-54-7 304681-55-8 304681-56-9  
304681-58-1 304681-59-2 304681-60-5 304681-61-6 304681-62-7  
304681-63-8 304681-64-9 304681-65-0 304681-66-1 304681-67-2  
304681-68-3 304681-69-4 304681-70-7 304681-71-8 304681-72-9  
304681-73-0 304681-74-1 **304681-75-2 304681-76-3**  
**304681-77-4** 304681-78-5 304681-79-6 304681-80-9  
304681-81-0 304681-82-1 304681-83-2 304681-84-3 304681-85-4  
304681-86-5 304681-87-6 304681-89-8 304681-90-1 304681-91-2  
304681-92-3 304681-93-4 304681-94-5 304681-95-6  
(Al-Zn-Mg-Cu-series alloy welding filler and heat treatment of  
the filler-added welding joints)  
IT 7439-95-4, Magnesium, processes 7440-02-0, Nickel, processes  
7440-22-4, Silver, processes 7440-32-6, Titanium, processes  
7440-42-8, Boron, processes **7440-44-0**, Carbon, processes  
7440-47-3, Chromium, processes 7440-62-2, Vanadium, processes  
7440-66-6, Zinc, processes 7440-67-7, Zirconium, processes  
(microalloying with; Al-Zn-Mg-Cu-series alloy welding filler and  
heat treatment of the filler-added welding joints)

L45 ANSWER 32 OF 42 HCA COPYRIGHT 2005 ACS on STN

133:284074 **Hydrogen-adsorbing** alloy in

**hydrogen** manufacture for use in secondary **battery**.

Kono, Tatsuoki; Sakai, Isao; Yoshida, Hideki; Inaba, Takamichi;  
Yamamoto, Masaaki (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP  
2000265229 A2 20000926, 15 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 1999-70484 19990316.

AB The alloy compn. has a general formula  $Mga(La1-bR1c)1-aNixCoyM1z$   
where R1 is Y or elements selected from rare earth group, Ce content  
is .ltoreq.20 wt.% of the amt. of (R1+La), M1 is selected from Mn,  
Fe,V, Cr, Nb, Al, Ga, Zn, Sn, Cu, Si, P, and B and the at. ratio a,  
b, x, y, and z are  $0.15 < a < 0.35$ ,  $0.55 < b < 0.95$ ,  $0.1 \text{ to } 0.9$ ,  $0.1 \text{ to } 0.9$ ,  
 $0.1 \text{ to } 0.9$ ,  $0.1 \text{ to } 0.9$ , and  $2.9 < x+y+z < 3.5$ , resp. The equil. pressure  
during adsorbing and releasing is stable and the pressure difference

of adsorbing and releasing is small.

IT 299201-35-7 299201-39-1 299201-55-1

299201-73-3 299201-79-9 299201-82-4

299201-87-9 299202-06-5

(hydrogen-adsorbing alloy in hydrogen  
manuf. for use in secondary battery)

RN 299201-35-7 HCA

CN Nickel alloy, base, Ni 61,Nd 21,La 6.7,Pr 6.4,Ce 1.8,Mg 1.8,Cr  
1.7,Al 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0
Nd	21	7440-00-8
La	6.7	7439-91-0
Pr	6.4	7440-10-0
Ce	1.8	7440-45-1
Mg	1.8	7439-95-4
Cr	1.7	7440-47-3
Al	0.3	7429-90-5

RN 299201-39-1 HCA

CN Nickel alloy, base, Ni 64,La 16,Mg 6.7,Nd 5.4,Pr 5.3,Y 1.3,Cu 1.2,Ce  
0.5,Al 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	64	7440-02-0
La	16	7439-91-0
Mg	6.7	7439-95-4
Nd	5.4	7440-00-8
Pr	5.3	7440-10-0
Y	1.3	7440-65-5
Cu	1.2	7440-50-8
Ce	0.5	7440-45-1
Al	0.2	7429-90-5

RN 299201-55-1 HCA

CN Nickel alloy, base, Ni 51,La 16,Nd 12,Co 11,Pr 4.4,Al 2.4,Mn 1.6,Mg  
1.4,Ce 1.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	51	7440-02-0
La	16	7439-91-0

Nd	12	7440-00-8
Co	11	7440-48-4
Pr	4.4	7440-10-0
Al	2.4	7429-90-5
Mn	1.6	7439-96-5
Mg	1.4	7439-95-4
Ce	1.3	7440-45-1

RN 299201-73-3 HCA

CN Nickel alloy, base, Ni 59,La 33,Mg 2.8,Cu 2.3,Cr 0.9,Nd 0.5,Pr 0.5,Al 0.3,Nb 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	33	7439-91-0
Mg	2.8	7439-95-4
Cu	2.3	7440-50-8
Cr	0.9	7440-47-3
Nd	0.5	7440-00-8
Pr	0.5	7440-10-0
Al	0.3	7429-90-5
Nb	0.3	7440-03-1

RN 299201-79-9 HCA

CN Nickel alloy, base, Ni 58,La 31,Co 4.8,Mg 2.2,Y 0.9,Sn 0.8,Al 0.7,Mn 0.5,Nd 0.3,Pr 0.3,Ce 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	58	7440-02-0
La	31	7439-91-0
Co	4.8	7440-48-4
Mg	2.2	7439-95-4
Y	0.9	7440-65-5
Sn	0.8	7440-31-5
Al	0.7	7429-90-5
Mn	0.5	7439-96-5
Nd	0.3	7440-00-8
Pr	0.3	7440-10-0
Ce	0.1	7440-45-1

RN 299201-82-4 HCA

CN Nickel alloy, base, Ni 52,La 22,Co 11,Nd 6.6,Mg 2.9,Pr 2.6,Mn 1.9,Al 0.5,Ce 0.5,Mo 0.3,P 0.1 (9CI) (CA INDEX NAME)



Component	Component Percent	Component Registry Number
Ni	52	7440-02-0
La	22	7439-91-0
Co	11	7440-48-4
Nd	6.6	7440-00-8
Mg	2.9	7439-95-4
Pr	2.6	7440-10-0
Mn	1.9	7439-96-5
Al	0.5	7429-90-5
Ce	0.5	7440-45-1
Mo	0.3	7439-98-7
P	0.1	7723-14-0

RN 299201-87-9 HCA

CN Nickel alloy, base, Ni 50,La 16,Nd 12,Co 9.5,Ce 4.5,Pr 4.1,Mg 2.2,Mn 1.8,Al 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	50	7440-02-0
La	16	7439-91-0
Nd	12	7440-00-8
Co	9.5	7440-48-4
Ce	4.5	7440-45-1
Pr	4.1	7440-10-0
Mg	2.2	7439-95-4
Mn	1.8	7439-96-5
Al	0.3	7429-90-5

RN 299202-06-5 HCA

CN Nickel alloy, base, Ni 54,Nd 19,La 12,Co 5.8,Pr 2.9,Ce 2.5,Mg 1.8,Mn 1.8,Al 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	54	7440-02-0
Nd	19	7440-00-8
La	12	7439-91-0
Co	5.8	7440-48-4
Pr	2.9	7440-10-0
Ce	2.5	7440-45-1
Mg	1.8	7439-95-4
Mn	1.8	7439-96-5
Al	0.3	7429-90-5

IT 1333-74-0P, **Hydrogen**, preparation  
(**hydrogen-adsorbing** alloy in **hydrogen**  
manuf. for use in secondary **battery**)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

IC ICM C22C019-00

ICS H01M004-38; H01M010-30

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **hydrogen adsorbing** alloy secondary  
**battery**

IT Secondary **batteries**

(**hydrogen-adsorbing** alloy in **hydrogen**  
manuf. for use in secondary **battery**)

IT 299201-31-3 299201-33-5 **299201-35-7** 299201-37-9  
**299201-39-1** 299201-41-5 299201-43-7 299201-45-9  
299201-47-1 299201-49-3 299201-51-7 299201-53-9  
**299201-55-1** 299201-58-4 299201-61-9 299201-64-2  
299201-66-4 299201-67-5 299201-69-7 299201-71-1  
**299201-73-3** 299201-75-5 299201-77-7 **299201-79-9**  
**299201-82-4** 299201-84-6 299201-85-7 **299201-87-9**  
299201-89-1 299201-91-5 299201-93-7 299201-95-9 299201-97-1  
299201-99-3 299202-01-0 299202-02-1 299202-04-3  
**299202-06-5**

(**hydrogen-adsorbing** alloy in **hydrogen**  
manuf. for use in secondary **battery**)

IT 1333-74-0P, **Hydrogen**, preparation  
(**hydrogen-adsorbing** alloy in **hydrogen**  
manuf. for use in secondary **battery**)

L45 ANSWER 33 OF 42 HCA COPYRIGHT 2005 ACS on STN

133:137865 **Hydrogen absorbing** alloy and method of  
manufacturing **hydrogen absorbing** alloy for  
alkali secondary **battery**. Irie, Shuichiro; Suzuki,  
Hideharu; Nishikawa, Reiji; Takeno, Kazuta (Toshiba Battery Co.,  
Ltd., Japan). Eur. Pat. Appl. EP 1026764 A2 20000809, 27 pp.  
DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI,  
LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN:  
EPXXDW. APPLICATION: EP 2000-101882 20000131. PRIORITY: JP  
1999-28634 19990205.

AB A **H absorbing** alloy represented by a general  
formula  $AM_x$  where A is at least one element selected from IA, IIA,  
IIIB, and IVB groups of the periodic table, and M is at least one  
element selected from VB, VIB, VIIB, VIIIB, IB, IIB, IIIA, IVA, and

VA group of the periodic table,  $x = 2.7-3.8$ , and an av. at. radius  $=1.36-1.39$  .ANG.. A is .gtoreq.1 element from Li, Mg, Ca, Sr, Sc, Y, Ti, Zr, La, Ce, Pr, Nd, Sm, Er, and Yb and M is .gtoreq.1 element from V, Nb, Cr, Mn, Fe, Co, Ni, Pd, Cu, Ag, Zn, B, Al, Ga, In, Si, Ge, Sn, P, Sb, and Bi.

IT **11113-74-9, Nickel hydroxide**  
 (hydrogen absorbing alloy and method of  
 manufg. hydrogen absorbing alloy for alkali  
 secondary battery)

RN 11113-74-9 HCA

CN Nickel hydroxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
HO	x	14280-30-9
Ni	x	7440-02-0

IT **1333-74-0, Hydrogen, uses 286414-72-0  
 286414-73-1**

(hydrogen absorbing alloy and method of  
 manufg. hydrogen absorbing alloy for alkali  
 secondary battery)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

RN 286414-72-0 HCA

CN Nickel alloy, base, Ni 53, La 28, Co 4.5, Mg 3, Nd 2.8, Sm 2.3, Ce 1.6, Pr 1.1, Y 1, Cu 0.7, Fe 0.6, Al 0.5, Zn 0.5, P 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	53	7440-02-0
La	28	7439-91-0
Co	4.5	7440-48-4
Mg	3	7439-95-4
Nd	2.8	7440-00-8
Sm	2.3	7440-19-9
Ce	1.6	7440-45-1
Pr	1.1	7440-10-0
Y	1	7440-65-5
Cu	0.7	7440-50-8
Fe	0.6	7439-89-6
Al	0.5	7429-90-5

Zn	0.5	7440-66-6
P	0.2	7723-14-0

RN 286414-73-1 HCA

CN Nickel alloy, base, Ni 53,La 15,Nd 12,Co 8.8,Pr 4.2,Mg 2.3,Ce 1.4,Mn 1.3,Cr 0.9,Yb 0.6,Al 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	53	7440-02-0
La	15	7439-91-0
Nd	12	7440-00-8
Co	8.8	7440-48-4
Pr	4.2	7440-10-0
Mg	2.3	7439-95-4
Ce	1.4	7440-45-1
Mn	1.3	7439-96-5
Cr	0.9	7440-47-3
Yb	0.6	7440-64-4
Al	0.3	7429-90-5

IC ICM H01M004-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 56

ST **battery** anode **hydrogen absorbing** alloy

IT Transition metal alloys

Transition metal alloys

(Group IB; **hydrogen absorbing** alloy and  
method of manufg. **hydrogen absorbing** alloy  
for alkali secondary **battery**)

IT Alloys, uses

Alloys, uses

(Group IIB element; **hydrogen absorbing** alloy  
and method of manufg. **hydrogen absorbing**  
alloy for alkali secondary **battery**)

IT Alloys, uses

Alloys, uses

(Group IIIA element; **hydrogen absorbing** alloy  
and method of manufg. **hydrogen absorbing**  
alloy for alkali secondary **battery**)

IT Transition metal alloys

Transition metal alloys

(Group IIIB; **hydrogen absorbing** alloy and  
method of manufg. **hydrogen absorbing** alloy  
for alkali secondary **battery**)

IT Alloys, uses

Alloys, uses

(Group IVA element; **hydrogen absorbing** alloy and method of manufg. **hydrogen absorbing** alloy for alkali secondary **battery**)

IT Transition metal alloys  
Transition metal alloys  
(Group IVB; **hydrogen absorbing** alloy and method of manufg. **hydrogen absorbing** alloy for alkali secondary **battery**)

IT Alloys, uses  
Alloys, uses  
(Group VA element; **hydrogen absorbing** alloy and method of manufg. **hydrogen absorbing** alloy for alkali secondary **battery**)

IT Transition metal alloys  
Transition metal alloys  
(Group VB element alloys; **hydrogen absorbing** alloy and method of manufg. **hydrogen absorbing** alloy for alkali secondary **battery**)

IT Transition metal alloys  
Transition metal alloys  
(Group VIB element alloys; **hydrogen absorbing** alloy and method of manufg. **hydrogen absorbing** alloy for alkali secondary **battery**)

IT Transition metal alloys  
Transition metal alloys  
(Group VIIB; **hydrogen absorbing** alloy and method of manufg. **hydrogen absorbing** alloy for alkali secondary **battery**)

IT Transition metal alloys  
Transition metal alloys  
(Group VIIB; **hydrogen absorbing** alloy and method of manufg. **hydrogen absorbing** alloy for alkali secondary **battery**)

IT Transition metal alloys  
Transition metal alloys  
(Group VIIB; **hydrogen absorbing** alloy and method of manufg. **hydrogen absorbing** alloy for alkali secondary **battery**)

IT Alloys, uses  
Alloys, uses  
(alk. earth; **hydrogen absorbing** alloy and method of manufg. **hydrogen absorbing** alloy for alkali secondary **battery**)

IT Alloys, uses  
Alloys, uses  
(alkali metal; **hydrogen absorbing** alloy and method of manufg. **hydrogen absorbing** alloy for alkali secondary **battery**)

IT Alkali metals, uses  
Alkali metals, uses  
Alkaline earth metals  
Alkaline earth metals  
Group IB elements

Group IB elements  
Group IIB elements  
Group IIB elements  
Group IIIA elements  
Group IIIA elements  
Group IIIB elements  
Group IIIB elements  
Group IVA elements  
Group IVA elements  
Group IVB elements  
Group IVB elements  
Group VA elements  
Group VA elements  
Group VB elements  
Group VB elements  
Group VIB elements  
Group VIB elements  
Group VIIB elements  
Group VIIB elements  
Group VIII elements  
Group VIII elements

(alloys; **hydrogen absorbing** alloy and method  
of manufg. **hydrogen absorbing** alloy for  
alkali secondary **battery**)

IT **Battery** anodes

Heat treatment

Hydriding

Secondary **batteries**

(**hydrogen absorbing** alloy and method of  
manufg. **hydrogen absorbing** alloy for alkali  
secondary **battery**)

IT **11113-74-9, Nickel hydroxide**

(**hydrogen absorbing** alloy and method of  
manufg. **hydrogen absorbing** alloy for alkali  
secondary **battery**)

IT 1307-96-6, Cobalt monoxide, uses

(**hydrogen absorbing** alloy and method of  
manufg. **hydrogen absorbing** alloy for alkali  
secondary **battery**)

IT **1333-74-0, Hydrogen**, uses **286414-72-0**

**286414-73-1** 286414-74-2

(**hydrogen absorbing** alloy and method of  
manufg. **hydrogen absorbing** alloy for alkali  
secondary **battery**)

L45 ANSWER 34 OF 42 HCA COPYRIGHT 2005 ACS on STN

132:224807 Nickel-hydrogen secondary **battery** with high

discharge capacity at high electric current. Endo, Masahiro; Irie,

Shuichiro; Taguchi, Koji; Mukai, Koichi; Takeno, Kazuta (Toshiba Battery Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000082491 A2 20000321, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-254209 19980908.

AB This Ni-H secondary **battery** comprises an anode comprising a current collector sheet bearing an anode mix mainly contg. a **H-storage** alloy with a formula  $\text{Ln}_{1-x}\text{Mg}_x(\text{Ni}_{1-y}\text{Ti})_z$  (Ln for a lanthanide, Ca, Sr, Sc, Y, Ti, Zr, and/or Hf; T for V, Nb, Ta, Cr, Mo, Mn, Fe, Co., Al, Ga, Zn, Sn, In, Cu, Si, P, and/or B;  $0 < x < 1$ ;  $0 \leq y \leq 0.5$ ;  $2.5 \leq z \leq 4.5$ ), a separator, a cathode comprising a current collector bearing a cathode mix mainly contg. a Ni compd., and an alk. electrolytic soln. The surface area of the cathode bearing the cathode mix is  $\geq 30 \text{ cm}^2$  per theor. capacity (Ah) of the **battery**. The Ni-H secondary **battery** has high capacity and high discharge current even at a low temp. and is usable for elec. power source for elec. vehicles.

IT **12054-48-7, Nickel hydroxide**  
(cathode contg.; nickel-hydrogen secondary **battery** comprising anode contg. specified **hydrogen-storage** alloy for high discharge current for elec. vehicle)

RN 12054-48-7 HCA

CN Nickel hydroxide ( $\text{Ni}(\text{OH})_2$ ) (8CI, 9CI) (CA INDEX NAME)

HO—Ni—OH

IT **261354-45-4**  
(nickel-hydrogen secondary **battery** comprising anode contg. specified **hydrogen-storage** alloy for high discharge current for elec. vehicle)

RN 261354-45-4 HCA

CN Nickel alloy, base, Ni 53, La 31, Co 13, Mg 2.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	53	7440-02-0
La	31	7439-91-0
Co	13	7440-48-4
Mg	2.4	7439-95-4

IC ICM H01M010-30

ICS C22C019-00; H01M002-26; H01M004-24; H01M004-32; H01M004-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** anode **hydrogen storage** alloy;  
nickel compd cathode **battery** elec vehicle

- IT Carbon black, uses  
Styrene-butadiene rubber, uses  
(anode active mass contg. **hydrogen-storage**  
alloy and; nickel-hydrogen secondary **battery** comprising  
anode contg. specified **hydrogen-storage** alloy  
for high discharge current for elec. vehicle)
- IT **Battery** anodes  
(nickel-hydrogen secondary **battery** comprising anode  
contg. specified **hydrogen-storage** alloy for  
high discharge current for elec. vehicle)
- IT Secondary **batteries**  
(nickel-hydrogen; nickel-hydrogen secondary **battery**  
comprising anode contg. specified **hydrogen-**  
**storage** alloy for high discharge current for elec.  
vehicle)
- IT 7440-02-0, Nickel, uses 58374-38-2, Sodium acrylate-vinyl alcohol  
copolymer  
(anode active mass contg. **hydrogen-storage**  
alloy and; nickel-hydrogen secondary **battery** comprising  
anode contg. specified **hydrogen-storage** alloy  
for high discharge current for elec. vehicle)
- IT 1307-96-6, Cobalt monoxide, uses  
(cathode contg. **nickel hydroxide** and;  
nickel-hydrogen secondary **battery** comprising anode  
contg. specified **hydrogen-storage** alloy for  
high discharge current for elec. vehicle)
- IT **12054-48-7, Nickel hydroxide**  
(cathode contg.; nickel-hydrogen secondary **battery**  
comprising anode contg. specified **hydrogen-**  
**storage** alloy for high discharge current for elec.  
vehicle)
- IT **261354-45-4**  
(nickel-hydrogen secondary **battery** comprising anode  
contg. specified **hydrogen-storage** alloy for  
high discharge current for elec. vehicle)
- IT 9003-55-8  
(styrene-butadiene rubber, anode active mass contg.  
**hydrogen-storage** alloy and; nickel-hydrogen  
secondary **battery** comprising anode contg. specified  
**hydrogen-storage** alloy for high discharge  
current for elec. vehicle)
- L45 ANSWER 35 OF 42 HCA COPYRIGHT 2005 ACS on STN  
132:95783 Nickel-hydrogen secondary **batteries**. Inaba,  
Takamichi; Sakai, Isao; Kawano, Tatsuoki; Yoshida, Hideki; Yamamoto,  
Masaaki (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP  
2000021439 A2 20000121, 17 pp. (Japanese). CODEN: JKXXAF.  
APPLICATION: JP 1998-184450 19980630.



AB The title **battery** comprises a **Ni hydroxide**-contg. cathode, a rare earth metal-Mg-Ni **H -absorbing** alloy anode having (at. ratio of rare earth metal + Mg):(other elements) = 1:3-1:3.8, a separator, and an alk. electrolyte and satisfies .gtoreq.1 of the following: (a) the cathode contains an (hydr)oxide (other than that of alkali metal or Ni) which does not coppt. with **Ni hydroxide**, (b) the anode, the separator, and/or the electrolyte contains an (hydr)oxide other than that of alkali metal or Ni. The **batteries** show excellent charge-discharge characteristics.

IT 255043-94-8 255043-95-9 255043-96-0  
 255043-97-1 255044-00-9 255044-01-0  
 255044-02-1 255044-03-2 255044-04-3  
 255044-05-4 255044-06-5 255044-07-6  
 255044-08-7 255044-09-8 255044-10-1  
 255044-12-3

(addn. of (hydr)oxides to nickel-hydrogen secondary  
**batteries** for excellent charge-discharge characteristics)

RN 255043-94-8 HCA

CN Nickel alloy, base, Ni 58,La 32,Co 4.9,Mg 2.5,Cu 2.1,Al 0.1 (9CI)  
 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	58	7440-02-0
La	32	7439-91-0
Co	4.9	7440-48-4
Mg	2.5	7439-95-4
Cu	2.1	7440-50-8
Al	0.1	7429-90-5

RN 255043-95-9 HCA

CN Nickel alloy, base, Ni 54,La 34,Co 10,Mg 1.7,Al 0.2,Mn 0.2 (9CI)  
 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	54	7440-02-0
La	34	7439-91-0
Co	10	7440-48-4
Mg	1.7	7439-95-4
Al	0.2	7429-90-5
Mn	0.2	7439-96-5

RN 255043-96-0 HCA

CN Nickel alloy, base, Ni 59,La 29,Co 7,Mg 2.4,Cu 2,Al 0.4 (9CI) (CA

## INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	29	7439-91-0
Co	7	7440-48-4
Mg	2.4	7439-95-4
Cu	2	7440-50-8
Al	0.4	7429-90-5

RN 255043-97-1 HCA

CN Nickel alloy, base, Ni 59,La 33,Co 4.5,Mg 2.2,Sn 0.4,Cr 0.2 (9CI)  
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	33	7439-91-0
Co	4.5	7440-48-4
Mg	2.2	7439-95-4
Sn	0.4	7440-31-5
Cr	0.2	7440-47-3

RN 255044-00-9 HCA

CN Nickel alloy, base, Ni 58,La 30,Co 7.1,Mg 2.6,Cu 1,Mn 0.9,Al 0.4,Si  
0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	58	7440-02-0
La	30	7439-91-0
Co	7.1	7440-48-4
Mg	2.6	7439-95-4
Cu	1	7440-50-8
Mn	0.9	7439-96-5
Al	0.4	7429-90-5
Si	0.3	7440-21-3

RN 255044-01-0 HCA

CN Nickel alloy, base, Ni 60,La 32,Co 4.8,Mg 2.9,Nb 0.3,Zn 0.2 (9CI)  
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
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```

=====+=====+=====
Ni          60          7440-02-0
La          32          7439-91-0
Co          4.8         7440-48-4
Mg          2.9         7439-95-4
Nb          0.3         7440-03-1
Zn          0.2         7440-66-6

```

RN 255044-02-1 HCA

CN Nickel alloy, base, Ni 56,La 35,Zn 2.4,Cr 2.3,Co 2.2,Mg 2 (9CI) (CA INDEX NAME)

```

Component      Component      Component
                Percent      Registry Number
=====+=====+=====
Ni          56          7440-02-0
La          35          7439-91-0
Zn          2.4         7440-66-6
Cr          2.3         7440-47-3
Co          2.2         7440-48-4
Mg          2           7439-95-4

```

RN 255044-03-2 HCA

CN Nickel alloy, base, Ni 60,La 35,Co 2.8,Mg 1.6,V 0.3,P 0.1 (9CI) (CA INDEX NAME)

```

Component      Component      Component
                Percent      Registry Number
=====+=====+=====
Ni          60          7440-02-0
La          35          7439-91-0
Co          2.8         7440-48-4
Mg          1.6         7439-95-4
V           0.3         7440-62-2
P           0.1         7723-14-0

```

RN 255044-04-3 HCA

CN Nickel alloy, base, Ni 57,La 32,Co 4.2,Mg 2.4,Cu 2.1,Zn 1.1,Mn 0.9,Al 0.1 (9CI) (CA INDEX NAME)

```

Component      Component      Component
                Percent      Registry Number
=====+=====+=====
Ni          57          7440-02-0
La          32          7439-91-0
Co          4.2         7440-48-4
Mg          2.4         7439-95-4
Cu          2.1         7440-50-8

```

Zn	1.1	7440-66-6
Mn	0.9	7439-96-5
Al	0.1	7429-90-5

RN 255044-05-4 HCA

CN Nickel alloy, base, Ni 59,La 32,Co 6.9,Mg 2.6,Al 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	32	7439-91-0
Co	6.9	7440-48-4
Mg	2.6	7439-95-4
Al	0.1	7429-90-5

RN 255044-06-5 HCA

CN Nickel alloy, base, Ni 64,La 33,Mg 2,Al 0.9,Mn 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	64	7440-02-0
La	33	7439-91-0
Mg	2	7439-95-4
Al	0.9	7429-90-5
Mn	0.2	7439-96-5

RN 255044-07-6 HCA

CN Nickel alloy, base, Ni 62,La 36,Mg 1.4,Al 0.8,Mn 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	36	7439-91-0
Mg	1.4	7439-95-4
Al	0.8	7429-90-5
Mn	0.2	7439-96-5

RN 255044-08-7 HCA

CN Nickel alloy, base, Ni 67,La 29,Mg 3.1,Al 0.9,Mn 0.2 (9CI) (CA INDEX NAME)

Component	Component	Component
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	Percent	Registry Number
Ni	67	7440-02-0
La	29	7439-91-0
Mg	3.1	7439-95-4
Al	0.9	7429-90-5
Mn	0.2	7439-96-5

RN 255044-09-8 HCA

CN Nickel alloy, base, Ni 64,La 33,Co 1.8,Mg 1.6,Al 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	64	7440-02-0
La	33	7439-91-0
Co	1.8	7440-48-4
Mg	1.6	7439-95-4
Al	0.1	7429-90-5

RN 255044-10-1 HCA

CN Nickel alloy, base, Ni 57,La 32,Co 5.6,Mg 2.9,Cu 2.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	57	7440-02-0
La	32	7439-91-0
Co	5.6	7440-48-4
Mg	2.9	7439-95-4
Cu	2.2	7440-50-8

RN 255044-12-3 HCA

CN Nickel alloy, base, Ni 55,La 33,Co 4.9,Mg 3,Cu 2.3,Sn 1.3,Fe 0.6,Al 0.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	55	7440-02-0
La	33	7439-91-0
Co	4.9	7440-48-4
Mg	3	7439-95-4
Cu	2.3	7440-50-8
Sn	1.3	7440-31-5
Fe	0.6	7439-89-6

Al 0.5 7429-90-5

IT **12054-48-7, Nickel hydroxide**

(cathode; addn. of (hydr)oxides to nickel-hydrogen secondary  
**batteries** for excellent charge-discharge characteristics)

RN 12054-48-7 HCA

CN Nickel hydroxide (Ni(OH)<sub>2</sub>) (8CI, 9CI) (CA INDEX NAME)

HO—Ni—OH

IC ICM H01M010-30

ICS C22C019-00; H01M002-16; H01M004-24; H01M004-32; H01M004-38;  
H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST nickel hydrogen secondary **battery** oxide additive; oxide  
additive secondary **battery**; hydroxide additive secondary  
**battery**

IT Secondary **batteries**

(addn. of (hydr)oxides to nickel-hydrogen secondary  
**batteries** for excellent charge-discharge characteristics)

IT Alloys, uses

(**hydrogen-absorbing**; addn. of (hydr)oxides to  
nickel-hydrogen secondary **batteries** for excellent  
charge-discharge characteristics)

IT **255043-94-8 255043-95-9 255043-96-0**

**255043-97-1 255043-99-3 255044-00-9**

**255044-01-0 255044-02-1 255044-03-2**

**255044-04-3 255044-05-4 255044-06-5**

**255044-07-6 255044-08-7 255044-09-8**

**255044-10-1 255044-11-2 255044-12-3**

**255044-13-4**

(addn. of (hydr)oxides to nickel-hydrogen secondary  
**batteries** for excellent charge-discharge characteristics)

IT 1304-76-3, Bismuth oxide, uses 1308-38-9, Chromium oxide, uses

1308-85-6, Dysprosium hydroxide 1308-87-8, Dysprosium oxide

1313-27-5, Molybdenum oxide, uses 1313-96-8, Niobium oxide

1314-13-2, Zinc oxide, uses 1314-23-4, Zirconium oxide, uses

1314-36-9, Yttrium oxide, uses 1314-37-0, Ytterbium oxide

1314-62-1, Vanadium oxide, uses 1343-98-2, Silicon hydroxide

1344-28-1, Aluminum oxide, uses 7631-86-9, Silicon oxide, uses

10361-43-0, Bismuth hydroxide 12054-57-8, Holmium hydroxide

12055-62-8, Holmium oxide 12061-16-4, Erbium oxide 12064-62-9,

Gadolinium oxide 12626-43-6, Chromium hydroxide 12710-38-2,

Niobium hydroxide 14475-63-9, Zirconium hydroxide (Zr(OH)<sub>4</sub>)

14646-16-3, Erbium hydroxide 16469-18-4, Gadolinium hydroxide

16469-20-8, Ytterbium hydroxide 16469-22-0, Yttrium hydroxide

20427-58-1, Zinc hydroxide 21645-51-2, Aluminum hydroxide

(Al(OH)<sub>3</sub>), uses 102857-58-9, Vanadium hydroxide 126853-99-4, Molybdenum hydroxide

(addn. of (hydr)oxides to nickel-hydrogen secondary **batteries** for excellent charge-discharge characteristics)

IT 12672-51-4, Cobalt hydroxide  
(cathode contg.; addn. of (hydr)oxides to nickel-hydrogen secondary **batteries** for excellent charge-discharge characteristics)

IT **12054-48-7, Nickel hydroxide**  
(cathode; addn. of (hydr)oxides to nickel-hydrogen secondary **batteries** for excellent charge-discharge characteristics)

L45 ANSWER 36 OF 42 HCA COPYRIGHT 2005 ACS on STN

131:47188 Nickel-hydrogen secondary **batteries** with rare earth alloy anodes. Yamamoto, Masaaki; Hayashida, Hirotaka; Kitayama, Hiroshi; Inada, Shusuke; Sakai, Isao; Kono, Tatsuoki; Yoshida, Hideki; Inaba, Takamichi; Kanda, Motoki (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 11162459 A2 19990618 Heisei, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-329213 19971128.

AB The title **batteries** are equipped with anodes contg. 100 parts **H-absorbing** alloys (R<sub>1</sub>-xMgx)NiyAz (R = rare earth metals contg. Y, Ca, Zr, and/or Ti; A = Co, Mn, Fe, V, Cr, Nb, Al, Ga, Zn, Sn, Cu, Si, P, and/or B; 0 < x < 1; z = 0-1.5; 2.5 .ltoreq. y + z < 4.5) and 0.3-20 parts conductive metal chips and cathodes contg. **Ni hydroxide**. The **batteries** have high capacity and good high-rate charging-discharging performance.

IT **1333-74-0**, Hydrogen, uses  
(alloys contg. **absorbed**; nickel/hydrogen **batteries** using rare earth-magnesium-nickel alloys)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

IT **11113-74-9, Nickel hydroxide**  
(cathodes; nickel/hydrogen **batteries** using rare earth-magnesium-nickel alloys)

RN 11113-74-9 HCA

CN Nickel hydroxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
HO	x	14280-30-9
Ni	x	7440-02-0

IT 226418-72-0

(**hydrogen-absorbing**, anodes; nickel/  
**hydrogen batteries** using rare  
 earth-magnesium-nickel alloys)

RN 226418-72-0 HCA

CN Nickel alloy, base, Ni 52,La 35,Co 10,Mg 2.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	52	7440-02-0
La	35	7439-91-0
Co	10	7440-48-4
Mg	2.6	7439-95-4

IC ICM H01M004-24

ICS C22C019-00; H01M004-38; H01M004-62; H01M010-30

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 56

ST rare earth magnesium nickel alloy anode; **hydrogen**  
**absorbing** alloy nickel **battery**

IT Rare earth alloys

(anodes; nickel/hydrogen **batteries** using rare  
 earth-magnesium-nickel alloys)

IT **Battery** anodesSecondary **batteries**

(nickel/hydrogen **batteries** using rare  
 earth-magnesium-nickel alloys)

IT 1333-74-0, Hydrogen, uses

(alloys contg. **absorbed**; nickel/**hydrogen**  
**batteries** using rare earth-magnesium-nickel alloys)

IT 11113-74-9, Nickel hydroxide

(cathodes; nickel/hydrogen **batteries** using rare  
 earth-magnesium-nickel alloys)

IT 7440-02-0, Nickel, uses

(conductive substances, anodes contg.; nickel/hydrogen  
**batteries** using rare earth-magnesium-nickel alloys)

IT 7429-90-5, Aluminum, uses 7439-89-6, Iron, uses 7439-96-5,  
 Manganese, uses 7440-03-1, Niobium, uses 7440-21-3, Silicon,  
 uses 7440-31-5, Tin, uses 7440-32-6, Titanium, uses 7440-42-8,  
 Boron, uses 7440-47-3, Chromium, uses 7440-50-8, Copper, uses  
 7440-55-3, Gallium, uses 7440-62-2, Vanadium, uses 7440-65-5,  
 Yttrium, uses 7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses  
 7440-70-2, Calcium, uses 7723-14-0, Phosphorus, uses

(**hydrogen-absorbing** alloys contg., anodes;  
 nickel/hydrogen **batteries** using rare  
 earth-magnesium-nickel alloys)

IT 226418-72-0 227623-67-8



(**hydrogen-absorbing**, anodes; nickel/  
**hydrogen batteries** using rare  
 earth-magnesium-nickel alloys)

L45 ANSWER 37 OF 42 HCA COPYRIGHT 2005 ACS on STN

131:21331 Secondary nickel/hydrogen **batteries**. Yamamoto,  
 Masaaki; Hayashida, Hirotaka; Kitayama, Hiroshi; Inada, Shusuke;  
 Sakai, Isao; Kono, Tatsuoki; Yoshida, Hideki; Inaba, Takamichi;  
 Kanda, Motoki (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP  
 11162505 A2 19990618 Heisei, 10 pp. (Japanese). CODEN: JKXXAF.  
 APPLICATION: JP 1997-329211 19971128.

AB The **batteries** have a **H absorbing**  
 $R1-xMg_xNi_yAz$  ( $R = Y$  contg. rare earth metals, Ca, Zr, and/or Ti;  $A =$   
 Co, Mn, Fe, V, Cr, Nb, Al, Ga, Zn, Sn, Cu, Si, P, and/or B;  $0 < x < 1$ ;  
 $0 \leq z \leq 1.5$ ;  $2.5 \leq (y+z) \leq 4.5$ ) alloy anode,  
 a **Ni(OH)<sub>2</sub>** cathode, and a nonwoven  
 separator contg. synthetic resin fibers; where the the wt. of the  
**H absorbing** alloy/unit anode area is  $\leq 6$   
 time the base wt. of the separator.

IT **1333-74-0**, Hydrogen, uses **226418-72-0**  
**226420-46-8 226420-47-9**

(controlled anode filling rate/separator base wt. ratio for  
 nickel/hydrogen **batteries** with nonwoven synthetic fiber  
 separators)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

RN 226418-72-0 HCA

CN Nickel alloy, base, Ni 52, La 35, Co 10, Mg 2.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	52	7440-02-0
La	35	7439-91-0
Co	10	7440-48-4
Mg	2.6	7439-95-4

RN 226420-46-8 HCA

CN Nickel alloy, base, Ni 57, La 24, Pr 15, Al 1.9, Mg 1.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	57	7440-02-0
La	24	7439-91-0
Pr	15	7440-02-0
Al	1.9	7429-90-0
Mg	1.7	7439-95-4

Ni	57	7440-02-0
La	24	7439-91-0
Pr	15	7440-10-0
Al	1.9	7429-90-5
Mg	1.7	7439-95-4

RN 226420-47-9 HCA

CN Nickel alloy, base, Ni 59,La 25,Nd 10,Mn 3.9,Mg 2.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====
Ni	59	7440-02-0
La	25	7439-91-0
Nd	10	7440-00-8
Mn	3.9	7439-96-5
Mg	2.6	7439-95-4

IC ICM H01M010-30.

ICS C22C019-00; H01M002-16; H01M004-24; H01M004-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST nickel hydrogen **battery** anode separator ratio

IT Polyolefin fibers

(acrylic acid grafted or sulfonated; controlled anode filling rate/separator base wt. ratio for nickel/hydrogen

**batteries** with nonwoven synthetic fiber separators)IT **Battery** anodesSecondary **batteries**Secondary **battery** separators(controlled anode filling rate/separator base wt. ratio for nickel/hydrogen **batteries** with nonwoven synthetic fiber separators)IT **1333-74-0**, Hydrogen, uses **226418-72-0****226420-46-8 226420-47-9**(controlled anode filling rate/separator base wt. ratio for nickel/hydrogen **batteries** with nonwoven synthetic fiber separators)

L45 ANSWER 38 OF 42 HCA COPYRIGHT 2005 ACS on STN

131:21329 Secondary nickel/hydrogen **batteries**. Kitayama, Hiroshi; Hayashida, Hirotaka; Yamamoto, Masaaki; Sakai, kaoru; Kono, Tatsuoki; Yoshida, Hideki; Inaba, Takamichi; Inada, Shusuke; Kanda, Motoki (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 11162503 A2 19990618 Heisei, 15 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-329214 19971128.

AB The **batteries** have a **H absorbing**

R1-xMgxNiyAz (R = Y contg. rare earth metals, Ca, Zr, and/or Ti; A =

Co, Mn, Fe, V, Cr, Nb, Al, Ga, Zn, Sn, Cu, Si, P, and/or B;  $0 < x < 1$ ;  $0 \leq z \leq 1.5$ ;  $2.5 \leq (y+z) \leq 4.5$ ) alloy anode, a cathode, and an alk. electrolyte; where the anode contains the alloy at a wt.  $X = 3.2-5.0$  g/A.h theor. cathode capacity, and the electrolyte has a vol. of 0.9 to  $(0.2X + 0.7)$  mL.

IT **1333-74-0**, Hydrogen, uses **12054-48-7**,  
**Nickel hydroxide** [Ni(OH)  
2] **226418-72-0**  
(controlled electrode and electrolyte ratios in nickel/hydrogen  
**batteries**)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

RN 12054-48-7 HCA

CN Nickel hydroxide (Ni(OH)<sub>2</sub>) (8CI, 9CI) (CA INDEX NAME)

HO-Ni-OH

RN 226418-72-0 HCA

CN Nickel alloy, base, Ni 52,La 35,Co 10,Mg 2.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	52	7440-02-0
La	35	7439-91-0
Co	10	7440-48-4
Mg	2.6	7439-95-4

IC ICM H01M010-30

ICS C22C019-00; H01M004-24; H01M004-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST nickel hydrogen **battery** electrode ratio; electrolyte

nickel hydrogen **battery**

IT **Battery** electrodes

**Battery** electrolytes

Secondary **batteries**

(controlled electrode and electrolyte ratios in nickel/hydrogen  
**batteries**)

IT 1310-58-3, Potassium hydroxide, uses 1310-65-2, Lithium hydroxide  
1310-73-2, Sodium hydroxide, uses **1333-74-0**, Hydrogen,  
uses **12054-48-7**, **Nickel hydroxide** [  
**Ni(OH)<sub>2</sub>**] **226418-72-0**

(controlled electrode and electrolyte ratios in nickel/hydrogen

**batteries)**

L45 ANSWER 39 OF 42 HCA COPYRIGHT 2005 ACS on STN

126:240730 Rare earth-nickel based **hydrogen absorbing** alloys, their manufacture, and anodes for nickel/hydrogen **batteries**. Kaneko, Akihito (Santoku Metal Industry Co., Ltd., Japan). PCT Int. Appl. WO 9708353 A1 19970306, 26 pp. DESIGNATED STATES: W: CN, JP, KR, US; RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (Japanese). CODEN: PIXXD2. APPLICATION: WO 1996-JP2400 19960828. PRIORITY: JP 1995-245166 19950831.

AB The alloys are  $(R1-xLx)(Ni1-yMy)z$  ( $R = La, Ce, Pr$ , and/or  $Nd$ ;  $L = Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, Sc, Mg$ , and/or  $Ca$ ;  $M = Co, Al, Mn, Fe, Cu, Zr, Ti, Mo, Si, V, Cr, Nb, Hf, Ta, W, B$ , and/or  $C$ ;  $0.01 \leq x \leq 0.1$ ;  $0 \leq y \leq 0.5$ ; and  $4.5 \leq z \leq 5.0$ ) with 10-95 vol.% crystals have 2-20 antiphase boundaries perpendicular to the  $c$  axis/20 nm in  $c$  axis of the crystal grains and 60-95% of  $L$  in the antiphase boundaries. The alloys are prepd. by cooling melted alloys at 1000-10,000.degree./s to a supercooling extent of 50-500.degree. and heating the solidified alloy at 800-1000.degree. for 0.1-12 h in vacuum or an inert atm. The **batteries** have high initial activity and capacity and long cycle life.

IT **1333-74-0**, Hydrogen, uses  
(compns. and cryst. structure and manuf. of **hydrogen absorbing** rare earth-nickel alloys for **battery** anodes)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H-H

IT **188483-54-7P**  
(compns. and cryst. structure and manuf. of **hydrogen absorbing** rare earth-nickel alloys for **battery** anodes)

RN 188483-54-7 HCA

CN Nickel alloy, base, Ni 51, Ce 16, La 8.2, Co 7.5, Mn 6.6, Nd 6.6, Pr 1.8, Al 1.3, Mg 0.5, Fe 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	51	7440-02-0
Ce	16	7440-45-1
La	8.2	7439-91-0
Co	7.5	7440-48-4

Mn	6.6	7439-96-5
Nd	6.6	7440-00-8
Pr	1.8	7440-10-0
Al	1.3	7429-90-5
Mg	0.5	7439-95-4
Fe	0.3	7439-89-6

IC ICM C22C019-00

ICS H01M004-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** anode rare earth nickel alloy; hydrogen anode rare earth nickel alloy; crust structure rare earth nickel alloy

IT **Battery** anodes

(comps. and cryst. structure and manuf. of **hydrogen absorbing** rare earth-nickel alloys for **battery** anodes)

IT **1333-74-0**, Hydrogen, uses 188483-71-8

(comps. and cryst. structure and manuf. of **hydrogen absorbing** rare earth-nickel alloys for **battery** anodes)

IT 188483-46-7P 188483-47-8P 188483-48-9P 188483-49-0P

188483-50-3P 188483-51-4P 188483-52-5P 188483-53-6P

**188483-54-7P** 188483-55-8P 188483-56-9P 188483-57-0P

188483-58-1P 188483-59-2P 188483-60-5P

(comps. and cryst. structure and manuf. of **hydrogen absorbing** rare earth-nickel alloys for **battery** anodes)

L45 ANSWER 40 OF 42 HCA COPYRIGHT 2005 ACS on STN

126:201667 Rare earth metal-nickel based **hydrogen**

**absorbing** alloy, process for preparing the same, and anode for nickel-hydrogen secondary **battery**. Kaneko, Akihito (Santoku Metal Industry Co., Ltd., Japan). PCT Int. Appl. WO 9703213 A1 19970130, 40 pp. DESIGNATED STATES: W: CN, JP, KR, US; RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (Japanese). CODEN: PIXXD2. APPLICATION: WO 1996-JP1900 19960709. PRIORITY: JP 1995-195722 19950710; JP 1995-195723 19950710; JP 1995-195724 19950710.

AB The rare earth metal-nickel-base **hydrogen**

**absorbing** alloys are  $(R_{1-x}L_x)(Ni_{1-y}My)_z$  where R =La, Ce, Pr, or Nd; L =Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, Sc, Mg, or Ca; M =Co, Al, Mn, Fe, Cu, Zr, Ti, Mo, Si, V, Cr, Nb, Hf, Ta, W, B, or C; 0.05  $\leq x \leq 0.4$ , 0  $\leq y \leq 0.4$ , and 3.0  $\leq z \leq 4.5$ . The alloy contains 30-95 vol.% crystal grains having 5-25 reverse phase boundaries/20 nm length in the c axis of the crystal, and the reverse phase boundaries are perpendicular to the c axis and contain 60-95% of L.

IT **1333-74-0**, Hydrogen, uses

(compns. and structure of **hydrogen absorbing**  
rare earth-nickel based alloys for **battery** anodes and  
their manuf.)

RN 1333-74-0 HCA

CN Hydrogen (8CI, 9CI) (CA INDEX NAME)

H- H

IT **187793-91-5P 187794-10-1P**

(compns. and structure of **hydrogen absorbing**  
rare earth-nickel based alloys for **battery** anodes and  
their manuf.)

RN 187793-91-5 HCA

CN Nickel alloy, base, Ni 50,Ce 16,La 7.9,Co 7.5,Mn 7,Nd 6.4,Mg 2.2,Pr  
1.8,Al 1.3,Fe 0.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	50	7440-02-0
Ce	16	7440-45-1
La	7.9	7439-91-0
Co	7.5	7440-48-4
Mn	7	7439-96-5
Nd	6.4	7440-00-8
Mg	2.2	7439-95-4
Pr	1.8	7440-10-0
Al	1.3	7429-90-5
Fe	0.4	7439-89-6

RN 187794-10-1 HCA

CN Nickel alloy, base, Ni 50,Ce 16,La 8,Co 7.6,Mn 6.6,Nd 6.6,Pr 1.6,Mg  
1.4,Al 1.3,Fe 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	50	7440-02-0
Ce	16	7440-45-1
La	8	7439-91-0
Co	7.6	7440-48-4
Mn	6.6	7439-96-5
Nd	6.6	7440-00-8
Pr	1.6	7440-10-0
Mg	1.4	7439-95-4
Al	1.3	7429-90-5
Fe	0.3	7439-89-6

IC ICM C22C019-00  
ICS H01M004-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** anode rare earth nickel alloy; **hydrogen absorbing** rare earth nickel anode

IT **Battery** anodes  
(compns. and structure of **hydrogen absorbing** rare earth-nickel based alloys for **battery** anodes and their manuf.)

IT **1333-74-0**, Hydrogen, uses  
(compns. and structure of **hydrogen absorbing** rare earth-nickel based alloys for **battery** anodes and their manuf.)

IT 187793-47-1P 187793-49-3P 187793-51-7P 187793-53-9P  
187793-55-1P 187793-57-3P 187793-59-5P 187793-61-9P  
187793-64-2P 187793-66-4P 187793-68-6P 187793-70-0P  
187793-72-2P 187793-73-3P 187793-75-5P 187793-77-7P  
187793-79-9P 187793-81-3P 187793-83-5P 187793-85-7P  
187793-87-9P 187793-89-1P **187793-91-5P** 187793-92-6P  
187793-93-7P 187793-94-8P 187793-95-9P 187793-96-0P  
187793-97-1P 187793-98-2P 187793-99-3P 187794-00-9P  
187794-02-1P 187794-04-3P 187794-06-5P 187794-08-7P  
**187794-10-1P** 187794-12-3P 187794-14-5P 187794-15-6P  
187794-16-7P 187794-18-9P  
(compns. and structure of **hydrogen absorbing** rare earth-nickel based alloys for **battery** anodes and their manuf.)

L45 ANSWER 41 OF 42 HCA COPYRIGHT 2005 ACS on STN

101:115382 Copper-nickel-magnesium alloy for cast iron production.  
Tybulczuk, Jerzy; Cupial, Janusz (Instytut Odlewnictwa, Pol.).  
Brit. UK Pat. Appl. GB 2129439 A1 19840516, 3 pp. (English).  
CODEN: BAXXDU. APPLICATION: GB 1982-29817 19821019.

AB Ductile pearlitic cast iron is manufd. by using a Ni alloy contg. Cu 20-70, Mg 6-30, and Ce 1.2-2.0%. The alloy ensures a quiet melt treatment during **graphite** spheroidization. A typical Ni alloy [**91825-95-5**] contains Cu 35, Mg 17, and Ce 1.5%.

IT **91825-95-5 91825-96-6**  
(spheroidization of cast iron by)

RN 91825-95-5 HCA

CN Nickel alloy, base, Ni 46,Cu 35,Mg 17,Ce 1.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	46	7440-02-0
Cu	35	7440-50-8

Mg 17 7439-95-4  
Ce 1.5 7440-45-1

RN 91825-96-6 HCA  
CN Nickel alloy, base, Ni 21-73,Cu 20-52,Mg 6-25,Ce 1-2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	21 - 73	7440-02-0
Cu	20 - 52	7440-50-8
Mg	6 - 25	7439-95-4
Ce	1 - 2	7440-45-1

IC C22C019-03; C22C009-06  
CC 56-3 (Nonferrous Metals and Alloys)  
Section cross-reference(s): 55  
IT **91825-95-5 91825-96-6**  
(spheroidization of cast iron by)

L45 ANSWER 42 OF 42 HCA COPYRIGHT 2005 ACS on STN  
82:20001 Manufacture of castings of pipeline fittings from spheroidal cast iron. Levi, L. I.; Zhalimbetov, S. Zh.; Buyanov, A. N.; Struts, Yu. V.; Rysbekov, T. R.; Mishakov, Yu. N.; Maksimov, N. I.; Dramshev, V. S. (USSR). Liteinoe Proizvodstvo (8), 8-9 (Russian) 1974. CODEN: LIPRAX. ISSN: 0024-449X.  
AB The effects of master alloys of 4 different types (used for cast iron inoculation) on the structure and mech. properties of the cast iron were investigated. The following master alloys were tested: ZhKMK-1 (Fe 35, Mg 9, Ca 10, Si 40, Ba 6%); ZhKMK-5 (Fe 31, Mg 9, Ca 20, Si 40%); Ni-Mg (Fe 2.1, Mg 15, Ce 0.9, Ni 82%) and Cu-Mg (Fe 2, Mg 10, Ca 2, Si 7, Ba 0.2, Ce 0.4, Cu 78.4%). A special app. for continuous dosage of the granular master alloy to cast iron was developed and tested under industrial conditions. After inoculation, the cast iron contained C 3.4-3.5, Si 2.9-3.1, S .ltoreq.0.01, Mg 0.02-0.035, Mn .ltoreq.0.6, P .ltoreq.0.1, and Cr .ltoreq.0.7%; it made it possible to obtain thin-walled small castings in metal molds of an appropriate cast iron structure with spheroidal **graphite** and adequate mech. properties after heat treatment.  
IT **54658-60-5**  
(master alloy, for nodular iron)  
RN 54658-60-5 HCA  
CN Nickel alloy, base, Ni 82,Mg 15,Fe 2.1,Ce 0.9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
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=====+=====+=====
Ni      82      7440-02-0
Mg      15      7439-95-4
Fe       2.1    7439-89-6
Ce       0.9    7440-45-1
```

CC 55-2 (Ferrous Metals and Alloys)  
IT 51280-74-1 **54658-60-5** 54659-13-1 54853-57-5  
(master alloy, for nodular iron)